ADLINK TECHNOLOGY INC.

cPCI-6965 Series

6U CompactPCI Single Board Computer with Intel® Core™2 Duo, Celeron® M Processor

User's Manual

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Revision History

Revision	Release Date	Description of Change(s)
2.00	2009/04/27	Initial Release

Preface

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Using this Manual

Audience and Scope

The cPCI-6965 User's Manual is intended for hardware technicians and systems operators with knowledge of installing, configuring and operating industrial grade CompactPCI modules.

Manual Organization

This manual is organized as follows:

Chapter 1, Overview: Introduces the cPCI-6965, its features, block diagrams, and package contents.

Chapter 2, Specifications: Presents detailed specification information, and power consumption, and technical drawings.

Chapter 3, Functional Description: Describes the cPCI-6965's main functions.

Chapter 4, Board Interfaces: Describes the cPCI-6965 board interfaces, pin definitions, and jumper settings.

Chapter 5, Getting Started: Describes the installation instructions of the cPCI-6965.

Chapter 6, Driver Installation: Describes the driver installation procedures.

Chapter 7, Utilities: Describes the Watchdog Timer and Preboot Execution Environment functions.

Chapter 8, BIOS Setup Utility: Describes the AMIBIOS®8 BIOS setup utility.

Important Safety Instructions: Presents safety instructions all users must follow for the proper setup, installation and usage of equipment and/or software.

Getting Service: Contact information for ADLINK's worldwide offices.

Conventions

Take note of the following conventions used throughout this manual to make sure that users perform certain tasks and instructions properly.

NOTE:

Additional information, aids, and tips that help users perform tasks.

CAUTION:

Information to prevent ***minor*** physical injury, component damage, data loss, and/or program corruption when trying to complete a task.

WARNING:

Information to prevent ***serious*** physical injury, component damage, data loss, and/or program corruption when trying to complete a specific task.

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1 Overview

1.1 Introduction

The cPCI-6965 Series is a highly integrated 6U CompactPCI SBC in single slot (4HP) or dual slot (8HP) width form factor. It has been designed to support the Intel® Core™ 2 Duo and Celeron® M processors in 478-pin Micro-FCPGA. The cPCI-6965 is based on the Mobile Intel® GME965 Express chipset which offers outstanding graphics and I/O bandwidth, asset management capabilities, storage speed and reliability.

The cPCI-6965 supports dual-channel non-ECC 533/667 MHz DDR2 memory with a maximum capacity of up to 4GB, 533/800 MHz Front-Side Bus (FSB), and Mobile Intel® Graphics Media Accelerator X3100 (Intel® GMA X3100). The integrated graphics support dual independent displays through two DVI outputs on the front panel.

The cPCI-6965 offers versatile I/O ports such as two Gigabit Ethernet ports, two RS-232/422/485/485+ selectable serial ports, four USB 2.0 ports, PS/2 Keyboard/Mouse, and parallel port on the front panel. Additional I/O can be routed to available Rear Transition Modules (RTM), including USB, VGA, SCSI, Floppy port, Mic-in, Line-out, and SATA. The board also supports one 32-bit/33MHz CompactPCI interface and a PMC expansion slot.

Storage features of the cPCI-6965 include a pin header and mounting space for an onboard USB NAND flash module, two Serial ATA interfaces with mounting space for a 2.5” HDD, and CompactFlash socket.

1.2 Features

- 6U CompactPCI SBC in 4HP or 8HP width form factor
- Single Core™ 2 Duo 2.2GHz processor, 4MB L2 cache
- Front Side Bus 800MHz
- Mobile Intel® GME965 Memory Controller Hub and ICH8M I/O Hub
- Dual Channel DDR2 unbuffered non-ECC SDRAM at 667MHz
- Two stacked SO-DIMM sockets for maximum up to 4GB memory
- 32-bit/33MHz CompactPCI Interface based on PCI specifications
- One DVI-I and one DVI-D port on front panel
- Supports VGA+DVI or DVI+DVI dual independent displays
- Two PCI-Express® Gigabit Ethernet egress ports
- One EIDE CompactFlash socket
- Space for USB NAND flash module for storage option
- One SATA port for 2.5” HDD direct mounting and one 7-pin signal SATA port for external HDD
- Optional Rear Transition Module

1.3 Block Diagram

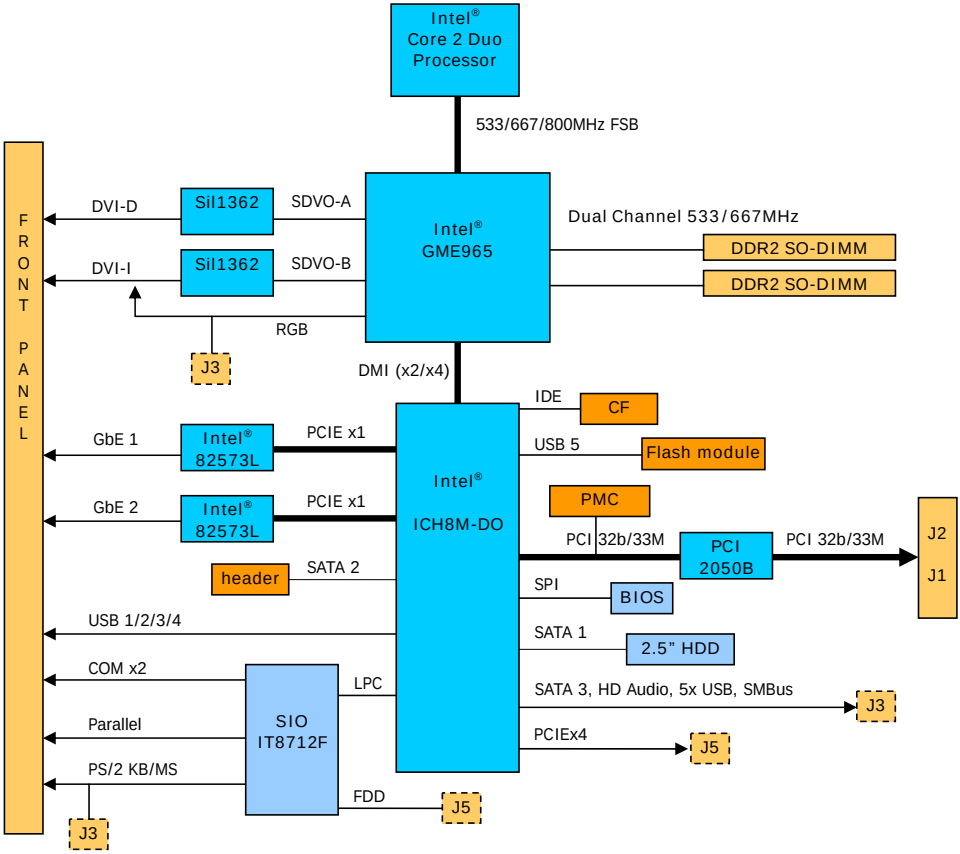

Figure 1-1: cPCI-6965 Series Block Diagram

1.4 Product List

Products included in the cPCI-6965 Series include:

SBC

- cPCI-6965: 4HP (single-slot) width 6U CompactPCI featuring Core™2 Duo or Celeron® processor; 512MB, 1GB, 2GB or 4GB memory by SO-DIMM; CompactFlash slot, 2xSATA ports, and 4xUSB, 2xGbE, DVI-D, DVI-I, COM and J3, J5 connectors
- cPCI-6965D: 8HP (dual-slot) width 6U CompactPCI featuring Core™2 Duo or Celeron® processor; 512MB, 1GB, 2GB or 4GB memory by SO-DIMM; CompactFlash slot, and 4x USB, 2x GbE, DVI-D, DVI-I, 2xCOM, printer port and J3, J5 connectors. A DB-6965PMC riser card is included to provide a PMC slot.
- cPCI-6965DZ: 8HP (dual-slot) width 6U CompactPCI featuring Core™2 Duo or Celeron® processor; 512MB, 1GB, 2GB or 4GB memory by SO-DIMM; CompactFlash slot, and 4x USB, 2x GbE, DVI-D, DVI-I, 2xCOM, printer port **without J3, J5 connectors**. A DB-6965PMC riser card is included to provide a PMC slot.

Rear Transition Module

- cPCI-R6000-965: 4HP width Rear Transition Module for cPCI-6965 SBCs with 2x USB, VGA, SCSI, Floppy, SATA port
- cPCI-R6000-965D: 8HP width Rear Transition Module for cPCI-6965 SBCs with 4x USB, VGA, SCSI, Floppy, SATA , Mic-in, Line-out, PS/2 KB/MS port
- cPCI-R6000-L: 4HP width Rear Transition Module for cPCI-6965 SBCs with 2x USB, VGA, Floppy, SATA port (without SCSI)
- cPCI-R6000D-L: 8HP width Rear Transition Module for cPCI-6965 SBCs with 4x USB, VGA, Floppy, SATA , Mic-in, Line-out, PS/2 KB/MS port (without SCSI)

1.5 Package Contents

The cPCI-6965 is packaged with the following components. If any of the items on the contents list are missing or damaged, retain the shipping carton and packing material and contact the dealer for inspection. Please obtain authorization before returning any product to ADLINK. The packing contents of the cPCI-6965 Series are non-standard configurations and may vary depending on customer requests.

CPU module

- The cPCI-6965 Series CPU Module
  - CPU, RAM will differ depending on options selected
  - Thermal module is assembled on the board
- Y-cable for PS/2 combo port (8HP version only)
- DVI to VGA adapter
- 2.5” HDD accessory pack, including DB-6910SAT adapter and screws, standoffs
- USB NAND flash module screw pack
- PMC accessory pack, including DB-6965PMC adapter and screws, standoffs (8HP version only)
- ADLINK All-in-One CD
- User’s manual

Rear Transition Module

- The cPCI-R6000-965, cPCI-R6000-965D, cPCI-R6000-L, or cPCI-R6000D-L
- Y-cable for PS/2 combo port (cPCI-R6000-965D, cPCI-R6000D-L only)
- DVI-to-VGA adapter
- 68-pin SCSI cable (cPCI-R6000-965, cPCI-R6000-965D only)

NOTE:

The contents of non-standard cPCI-6965 configurations may vary depending on the customer’s requirements.

This product must be protected from static discharge and physical shock. Never remove any of the components except at a static-free workstation. Use the anti-static bag shipped with the product when putting the board on a surface. Wear an anti-static wrist strap properly grounded on one of the system's ESD ground jacks when installing or servicing system components.

2 Specifications

2.1 cPCI-6965 SBC Specifications

CompactPCI Standard	PICMG® 2.0 CompactPCI® Rev. 3.0 PICMG® 2.1 Hot Swap specification Rev.2.0
Mechanical	Standard 6U CompactPCI®
	Board size: 233.23 mm x 160mm
	Single-slot (4HP, 20.32mm) or dual-slot (8HP, 40.64mm) width
	CompactPCI® connectors with J1, J2, J4, J5 for cPCI-6965, cPCI-6965D
	CompactPCI® connectors with J1, J2 for cPCI-6965DZ
Processor	µFC-PGA Intel® Core™2 Duo 2.2GHz (T7500), 4MB L2 cache, FSB 800MHz
	µFC-PGA Intel® Celeron® 2.0GHz (550), 1MB L2 cache, FSB 533MHz
	Passive heatsink
Chipset	IIntel GME965 Memory Controller Hub (MCH) Intel ICH8M I/O Controller Hub (ICH)
Memory	Dual channel DDR2-667 un-buffer non-ECC memory Two SO-DIMM sockets (stacked type) Maximum 4GB capacity
CompactPCI Bus	PCI 32bit/ 33MHz; 3.3V, 5V universal V(I/O) Supports operation in system slot only
PMC	One PCI 32bit/ 33MHz PMC, 3.3V, 5V universal V(I/O)
Ethernet	Two PCI-Express x1 Intel® 82573L GbE controllers Two egress 10/100/1000BASE-T ports
Graphics	GMA X3100 integrated in GME965 GMCH Shared system memory up to 384 MB Two DVI ports on front panel: one DVI-I (digital + analog), one DVI-D (digital only) Analog signal with up to 32-bit, 2048x1536 resolution @75Hz
Serial Ports	Up to two 16C550 compatible DB-9 serial ports from Super I/O IT8712F
	Both ports support RS232/422/485/485+ by switch selection

Storage Interfaces	2.5” SATA HDD direct connector onboard
	7-pin SATA port on board
	CompactFlash Type II socket onboard
	USB NAND Flash module option
BIOS	AMI® Core 8 16Mbit SPI flash memory
Front Panel I/O	**cPCI-6965 (4HP)**
	4x USB 2.0 ports 2x 10/100/1000BASE-T Ethernet ports DVI-I port (digital and analog) DVI-D port (digital only) DB-9 serial port
	cPCI-6965D (8HP)
	4x USB 2.0 ports 2x 10/100/1000BASE-T Ethernet ports DVI-I port (digital and analog) DVI-D port (digital only) 2x DB-9 serial ports PS/2 Keyboard Mouse Combo port Parallel port PMC faceplate
Supported OS	Microsoft Windows Vista Microsoft Windows XP Professional Fedora 7 (requires Intel IEGD driver to support dual independent displays - contact ADLINK) Fedora 10 Contact ADLINK for other OS support
Operating Temperature[1]	0°C to 55°C with forced air flow
Storage temperature	-40°C to 85°C
Humidity	20% to 90% @60°C non-condensing
Shock	15G peak-to-peak, 11ms duration, non-operating
Vibration[2]	Operating: 1.88G rms. 5 to 500Hz, each axis (without HDD)
Compliance	CE, FCC Class A

Notes:

1. ADLINK-certified thermal design. The thermal performance is dependent on the chassis cooling design. Forced airflow with 16CFM is required. Temperature limit of optional mass storage devices may affect the thermal specification.
2. The hard drive limits the operational vibration. When application requires higher specification for anti-vibration, it is recommended to use flash disk such as CF or USB flash disk module.

NOTE:

Specifications are subject to change without prior notice.

2.2 cPCI-R6000-965(D) & cPCI-R6000(D)-L Specifications

Mechanical	Standard 6U CompactPCI® rear I/O
	Board size: 233.23 mm x 80mm
	Single-slot (4HP, 20.32mm) or dual-slot (8HP, 40.64mm) width
	CompactPCI® connectors with rJ3 and rJ5
Rear Panel I/O	**cPCI-R6000-965 (4HP)**
	2x USB 2.0 ports VGA port (via DVI dongle) External 68-pin SCSI connector
	cPCI-R6000-L (4HP)
	2x USB 2.0 ports VGA port (via DVI dongle)
	cPCI-R6000-965D (8HP)
	4x USB 2.0 ports VGA port (via DVI dongle) PS/2 Keyboard Mouse port External 68-pin SCSI connector Mic-in, Line out
	cPCI-R6000D-L (8HP)
	4x USB 2.0 ports VGA port (via DVI dongle) PS/2 Keyboard Mouse port Mic-in, Line out
Onboard Peripherals	**cPCI-R6000-965, cPCI-R6000-965D**
	Floppy port 7-pin SATA port Internal 68-pin SCSI connector
	cPCI-R6000-L, cPCI-R6000D-L
	Floppy port 7-pin SATA port
SCSI	**cPCI-R6000-965, cPCI-R6000-965D**
	LSI® Logic LSI53C1020 PCI-X Ultra320 SCSI Controller Integrated RAID on PCI-X 64-bit/133MHz bus
	320MB per second data transfer rate
	Supports RAID 1 (mirroring)

2.3 I/O Connectivity Table

SBC

Function	cPCI-6965		cPCI-6965D	
	Faceplate	Board	Faceplate	Board
GbE	Y x2	--	Y x2	--
COM	Y (DB-9)		Y x2 (DB-9)	
USB	Y x4	--	Y x4	--
PMC	--	--	--	Y
DVI	Y x2	--	Y x2	--
SATA[1]	--	Y x2		Y x2
CF	--	Y	--	Y
PS/2 KB/MS	--	--	Y	--
Parallel			Y	
USB Flash		Y (optional)		Y (optional)
LEDs	Y x4	--	Y x4	--
Reset Button	Y	--	Y	--

Table 2-1: SBC I/O Connectivity

1. One 7-pin connector for external HDD and one connector for onboard 2.5” HDD.

RTM (4HP)

Function	cPCI-R6000-965		cPCI-R6000-L	
	Faceplate	Board	Faceplate	Board
USB	Y x2	--	Y x2	--
VGA	Y	--	Y	--
SATA	--	Y (7-pin)	--	Y (7-pin)
SCSI	Y	Y	--	--
Floppy	--	Y	--	Y

Table 2-2: RTM (4HP) I/O Connectivity

RTM (8HP)

Function	cPCI-R6000-965D		cPCI-R6000D-L	
	Faceplate	Board	Faceplate	Board
USB	Y x4	--	Y x4	--
VGA	Y	--	Y	--
SATA	--	Y (7-pin)	--	Y (7-pin)
PS/2 KB/MS	Y	--	Y	--
Mic/Line-out	Y	--	Y	--
SCSI	Y	Y	--	--
Floppy	--	Y	--	Y

Table 2-3: RTM (8HP) I/O Connectivity

2.4 Power Requirements

In order to guarantee a stable functionality of the system, it is recommended to provide more power than the system requires. **An industrial power supply unit should be able to provide at least twice as much power as the entire system requires of each voltage**. An ATX power supply unit should be able to provide at least three times as much power as the entire system requires.

The tolerance of the voltage lines described in the CompactPCI specification (PICMG 2.0 R3.0) is +5%/ -3% for 5, 3.3 V and ±5% for ±12V. This specification is for power delivered to each slot and it includes both the power supply and the backplane tolerance.

Voltage	Nominal Value	Tolerance	Max. Ripple (P - P)
5V	+5.0 VDC	+5% / -3%	50 mV
3.3V	+3.3 VDC	+5% / -3%	50 mV
+12V	+12 VDC	+5% / -5%	240 mV
-12V	-12 VDC	+5% / -5%	240 mV
V I/O (PCI I/O Buffer Voltage)	+3.3 VDC or +5 VDC	+5% / -3%	50 mV
GND			

Table 2-4: CompactPCI Input Voltage Characteristics

Power Consumption

The following tables provide information on the power consumption of the cPCI-6965 Series when using the Intel® Core 2 Duo T7500 or Celeron 550 processor with 2x 2GB SO-DIMM and onboard 60GB SATA hard drive. The systems were tested in Idle Mode and Full Loading Mode under Windows XP. The cPCI-6965 is powered by single 5V power rail.

Intel® Core™2 Duo T7500		
OS/Mode	**Current 5V**	**Total Power**
DOS/Idle mode	5.712 A	28.56 W
Linux/Idle mode	3.411 A	17.055 W
Windows XP/ Idle mode	3.490 A	17.45 W
Windows® XP/ CPU 100% Usage	9.416 A	47.08 W

Table 2-5: Intel® Core™2 Duo T7500 Power Consumption

Intel® Celeron® 550		
OS/Mode	**Current 5V**	**Total Power**
DOS/Idle mode	5.860 A	27.93 W
Linux/Idle mode	4.200 A	21.00 W
Windows XP/ Idle mode	4.278 A	21.39 W
Windows® XP/ CPU 100% Usage	6.534 A	32.67 W

Table 2-6: Intel® Celeron® 550 Power Consumption

3 Functional Description

The following sections describe the cPCI-6965 Series features and functions.

The following table lists the processors supported by the cPCI-6965 Series and their power ratings.

Features	Intel® Core™2 Duo T7500	Intel® Celeron® 550
Clock	2.2 GHz	2.0 GHz
L2 cache	4MB	1MB
FSB	800MHz	533MHz
Maximum Power (TDP[1])	35W	27W
$T_{junction\_MAX}$ [2]	100°C	100°C

Notes:

1. The highest expected sustainable power while running known power intensive applications. TDP is not the maximum power that the processor can dissipate.
2. The maximum supported operating temperature.

Intel® Core™2 Duo Processor T7500

The Intel® Core™2 Duo T7500 processor is a high-performance, low-power processor based on the Intel® Core™ microarchitecture and 65-nm process technology. The Intel Core 2 Duo processor supports the Mobile Intel® 965 Express Chipset and Intel® 82801HBM ICH8M Controller Hub Based Systems.

The following list outlines the key features of this processor:

- Dual core processor for mobile applications with enhanced performance
- Intel architecture with Intel® Wide Dynamic Execution
- L1 Cache to Cache (C2C) transfer
- On-die, primary 32-KB instruction cache and 32-KB write-back data cache in each core
- On-die, up to 4-MB second level shared cache with advanced transfer cache architecture
- Streaming SIMD Extensions 2 (SSE2), Streaming SIMD Extensions 3 (SSE3) and Supplemental Streaming SIMD Extensions 3 (SSSE3)
- 800-MHz Source-Synchronous Front Side Bus (FSB)
- Advanced power management features including Enhanced Intel SpeedStep® Technology and Dynamic FSB frequency switching.
- Intel Enhanced Deeper Sleep state with P_LVL5 I/O support
- Digital Thermal Sensor (DTS)
- Intel® 64 Technology
- Enhanced Intel® Virtualization Technology
- Intel® Dynamic Acceleration Technology
- Enhanced Multi Threaded Thermal Management (EMTTM)
- Execute Disable Bit support for enhanced security

Intel® Celeron® Processor 550

The following list provides some of the key features of this processor:

- Single core
- On-die, primary 32-KB instruction cache and 32-KB write-back data cache
- On-die, 1-MB second level shared cache with advanced transfer cache architecture
- 533-MHz source-synchronous front side bus (FSB)
- Supports Intel® architecture with dynamic execution
- Data prefetch logic
- Micro-FCPGA packaging technology
- MMX™ technology, Streaming SIMD Extensions (SSE), Streaming SIMD Extensions 2 (SSE2), Streaming SIMD Extensions 3 (SSE3), and Supplemental Streaming SIMD Extensions 3 (SSSE 3)
- Digital Thermal Sensor (DTS)
- Execute Disable Bit support for enhanced security
- Intel® 64 architecture (formerly Intel® EM64T)
- Architectural and performance enhancements of the Core microarchitecture

3.1 Chipset

The cPCI-6965 Series incorporates the Mobile Intel® GME965 Memory Controller Hub (MCH) and ICH8 Mobile (ICH8M) I/O Controller Hub.

Intel® GME965 Memory Controller Hub

The following outlines the key features of GME965 MCH.

Processor Support

- Intel® Core™2 Duo Mobile Processor for Mobile Intel 965 Express Chipset Family
- 533 MHz and 800 MHz FSB support
- Intel® Dynamic Front Side Bus Frequency Switching
- 36-bit interface to addressing, allowing the CPU to access the entire 64GB of the (G)MCH memory address space.

System Memory Support

- Supports dual-channel DDR2 SDRAM
- One SO-DIMM connector or module per channel
- Maximum 4GB memory supported
- 64-bit side per channel
- Support for DDR2 at 667MHz and 533 MHz
- 256-Mb, 512-Mb, and 1-Gb memory technologies supported
- Support for x8 and x16 devices
- No support for ECC

Direct Management Interface

- Chip-to-chip interface between (G)MCH and 82801 GMB/GHM
- Configurable as x2 or x4 DMI lanes
- 2-GB/s (1-GB/s each direction) point-to-point interface to Intel® 82801 GBM/GHM
- 32-bit downstream address

Integrated Graphics

- Mobile Intel® Graphics Media Accelerator X3100 (Mobile® Intel® GMA X3100)
- Supports a QXGA maximum resolution of 2048x1536 at 60Hz, 32-bpp reduced blanking timing (driver limited)
- Supports Analog TV-Out, LVDS, Analog CRT and SDVO (the cPCI-6965 implements analog CRT and SDVO only)
- Intel® Smart 2D Display Technology (Intel® S2DDT)
- Video Capture via x1 concurrent PCI Express port
- Dynamic Video Memory Technology (DVMT 4.0; 384 Maximum)
- Microsoft DirectX 9
- SGI OpenGL 1.5
- Display Hot Plug support
- Two SDVO ports supported (the cPCI-6965D is designed with a DVI 1.0 port for External Digital Monitor)

Intel® ICH8 Mobile I/O Controller Hub

The ICH8M provides extensive I/O support. Functions and capabilities include:

- Provides 6 PCI Expressx1 ports, supporting the PCI Express Base Specification, Revision 1.1. Each Root Port supports 2.5GB/s bandwidth in each direction. The cPCI-6965 utilizes two PCI Expressx1 ports for two Gigabit Ethernet controllers and routes two PCI Express x1 ports to board-to-board connector and J2 connector for expansion capability
- Enhanced DMA controller, interrupt controller, and timer functions
- Integrated Serial ATA host controller with independent DMA operation on three ports
- Integrated IDE controller supports Ultra ATA100/66/33
- System Management Bus (SMBus) Specification, Version 2.0 with additional support for I2C devices
- Supports Intel® Matrix Storage technology
- PCI Local Bus Specification, Revision 2.3 support for 33MHz PCI operations

3.2 DVI

The Silicon Image SDVO PanelLink Transmitter Sil1362 is designed into the cPCI-6965 to convert the SDVO signal to a DVI interface. The Sil1362A is fully compliant with Intel SDVO 1.0 and DVI 1.0.

3.3 Super I/O

The ITE IT8712F Super I/O is on a Low Pin Count interface supporting PS/2 keyboard/mouse; two 16550-compatible serial ports; floppy drive interface; hardware monitor function to monitor CPU voltage, CPU temperature, power supply voltages and system temperature; and Watch Dog Timer with time resolution from minimum 1 second to maximum 255 minutes.

3.4 Battery

The cPCI-6965 is provided with a 3.0V coin cell lithium battery for the Real Time Clock (RTC). The battery socket is equipped on the daughter board DB-6965BAT. The lithium battery must be replaced with an identical battery or a battery type recommended by the manufacturer. A Panasonic CR2032 is equipped on board by default.

3.5 PMC Site

The cPCI-6965 series supports a PMC site for front panel I/O expansion. The PMC site provides a 32bit/33MHz PCI bus link from the Intel® ICH8M I/O Hub. The PMC site supports +3.3V and 5V signaling.

3.6 Onboard USB Flash

- The cPCI-6965 provides a 9-pin header (CN7) to install a horizontal USB flash disk module. The following figure illustrates an example of USB flash module layout.

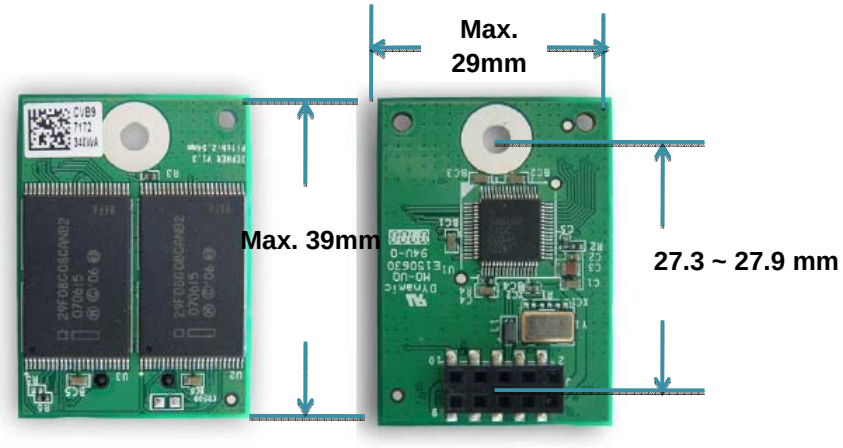

Figure 3-1: USB Flash Disk Mechanical Layout

USB Flash Disk Mechanical Layout

- Maximum space reserved for USB flash disk is 39mm x 29mm (LxW)
- The distance between the centers of connector and screw hole is 27.3mm~27.9mm
- The connector height is 7.4mm

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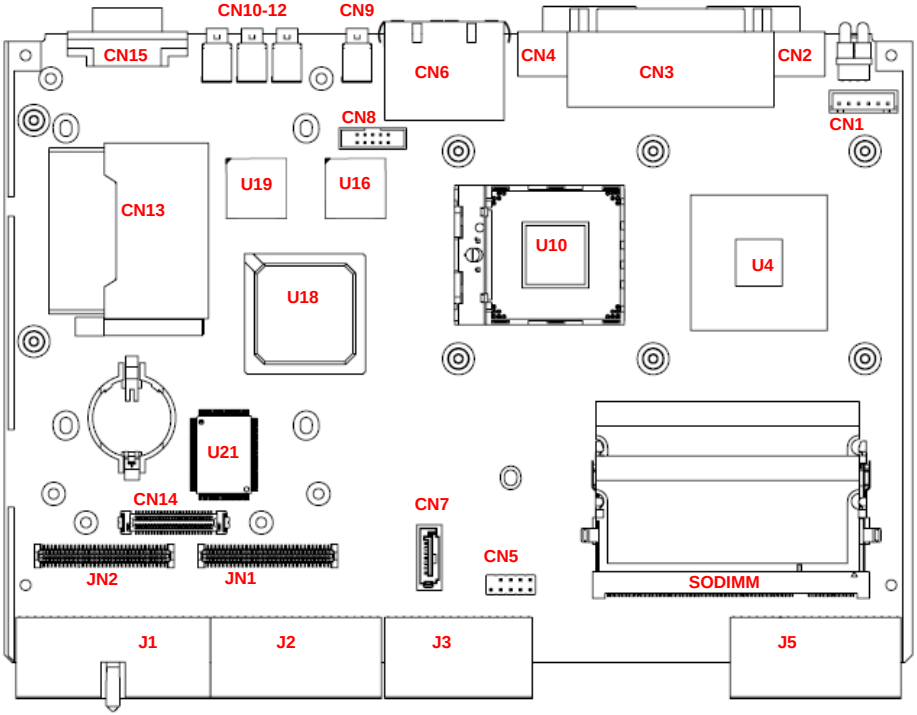
4 Board Interfaces

This chapter illustrates the board layout, connector pin assignments, and jumper settings to familiarize users with the cPCI-6965 Series.

4.1 cPCI-6965 SBC Board Layout



U10	CPU socket	**CN3/5**	7-pin SATA connector
U4	North Bridge Intel® GME965	**CN8/15**	Serial ports
U18	South Bridge Intel® ICH8M	**CN7**	DB-6965L2 connector
U16/19	GbE Controller Intel® 82573L	**CN9~12**	USB ports
U21	Super I/O	**CN13**	CF socket
CN1	PS/2 connector	**CN14**	DB-6910SAT connector
CN2/4	DVI connectors	**JN1/2**	DB-6965PMC connector
CN3	Printer port	**J1/2/3/5**	CompactPCI connectors
CN6	Dual RJ-45 GbE ports	**SODIMM**	Stacked SO-DIMM sockets

Figure 4-1: cPCI-6965 Board Layout

4.2 cPCI-6965 SBC Assembly Layout

This section describes the final assembly layout of cPCI-6965 (4HP).

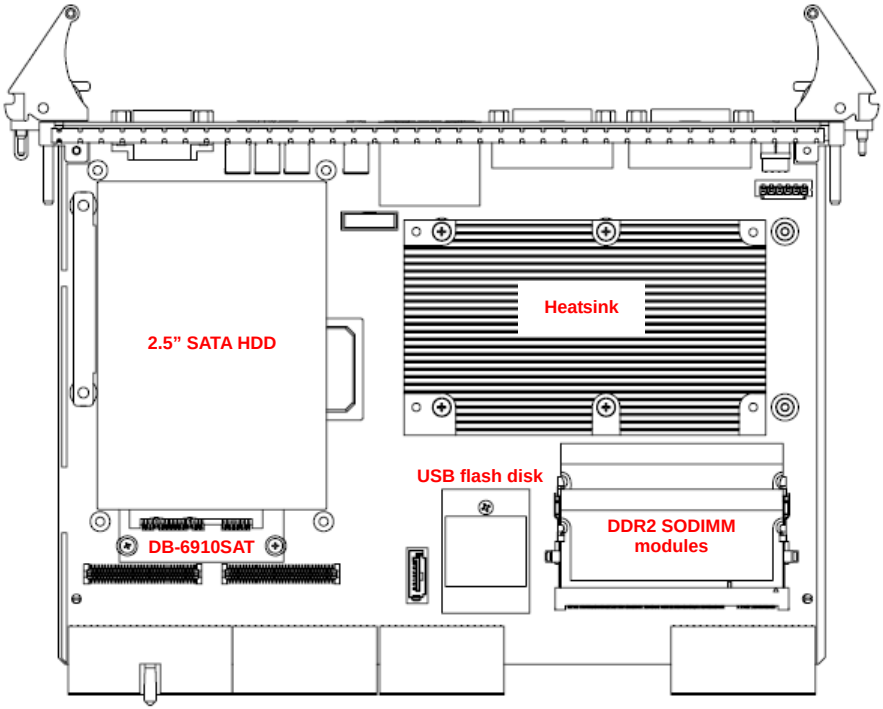


Figure 4-2: cPCI-6965 SBC Assembly Layout

4.3 cPCI-6965 SBC Assembly Layout

This section describes the final assembly layout of cPCI-6965D (8HP). The dual-slot width cPCI-6965D is comprised of the cPCI-6965 single-slot main board and the DB-6965PMC riser card (Upper1 and Upper2 are the PMC connectors).

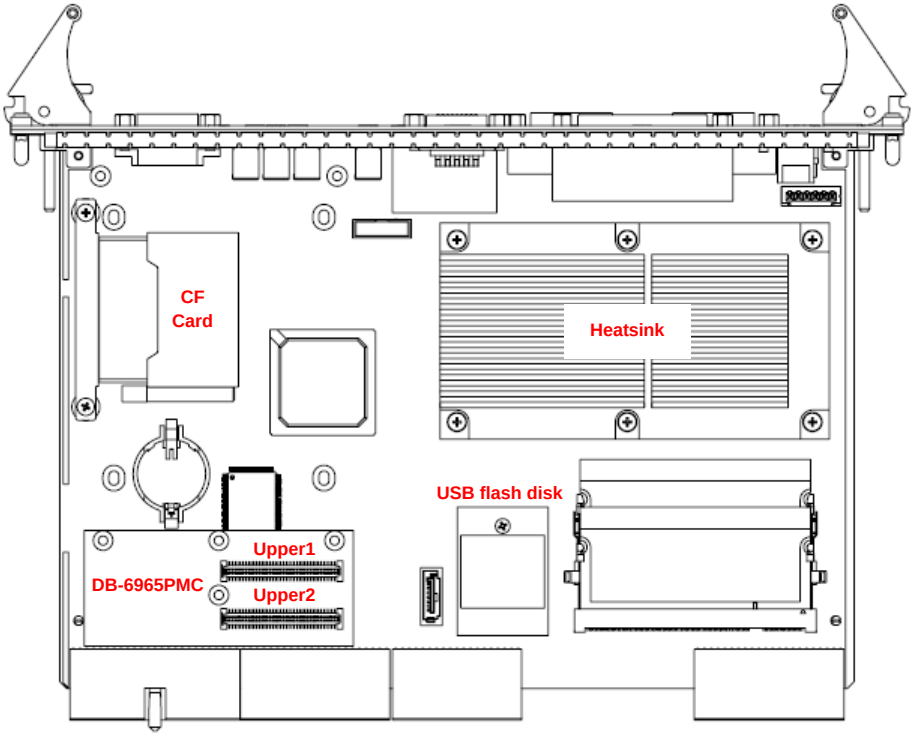
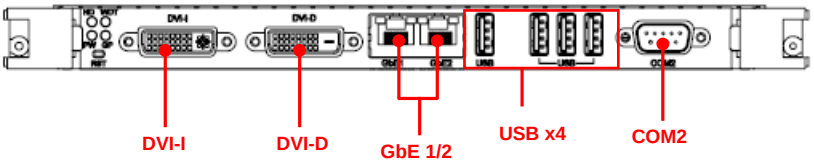


Figure 4-3: cPCI-6965D SBC Assembly Layout

4.4 cPCI-6965, cPCI-6965D SBC Front Panel

cPCI-6965



cPCI-6965D

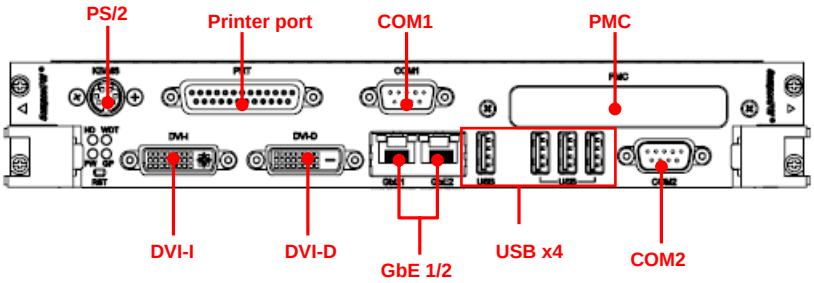


Figure 4-4: cPCI-6965 Series Front Panel Layout

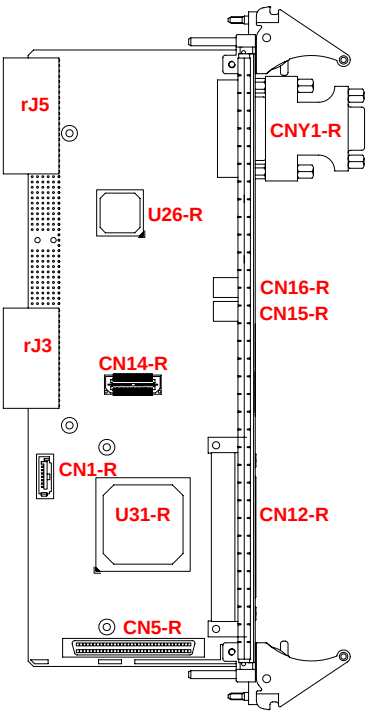
System LEDs

LED	Color	Condition	Indication
Power (PW)	Green	OFF	System is off
		ON	System is on
General Purpose (GP)	Blue	OFF	Reserved for user definition
WDT (WDT)	Amber	OFF	No Watchdog event
		ON	Watchdog event alert
HDD (HD)	Red	OFF	No read/write access to HDD
		ON	HDD is installed
		Blink	Data read/write in process

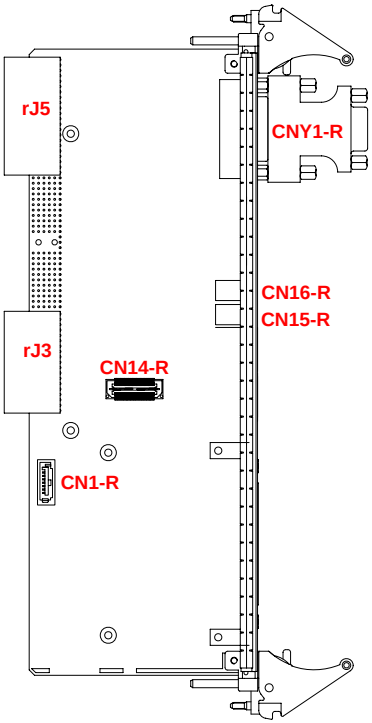
Table 4-1: cPCI-6965 Front Panel System LED Descriptions

4.5 cPCI-R6000-965/R6000-L RTM Board Layout

cPCI-R6000-965



cPCI-R6000-L



U26-R	PCI-E to PCI bridge	**CN12-R**	External SCSI connector
U31-R	SCSI controller	**CN15/16-R**	USB ports
CN1-R	SATA port (7-pin)	**CNY1-R**	DVI to VGA adapter
CN5-R	Internal SCSI connector	**CN14-R**	DB-R6000L2 connector(1)
rJ3-J5	CompactPCI Connectors		

Figure 4-5: cPCI-R6000-965, cPCI-R6000-L Board Layout

Note(1): Used for cPCI-R6000-965D and cPCI-R6000D-L RTM (8HP) only – shown here for clarity.

4.6 cPCI-R6000-965/R6000-L RTM Front Panel

cPCI-R6000-965

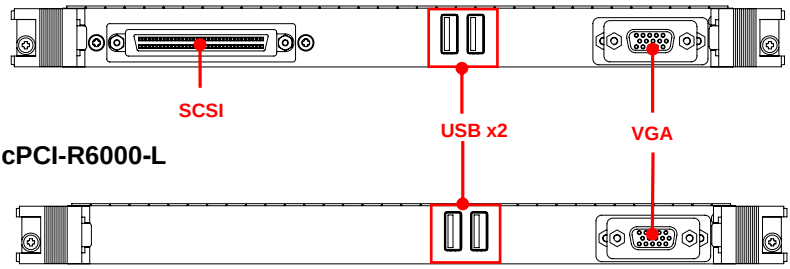
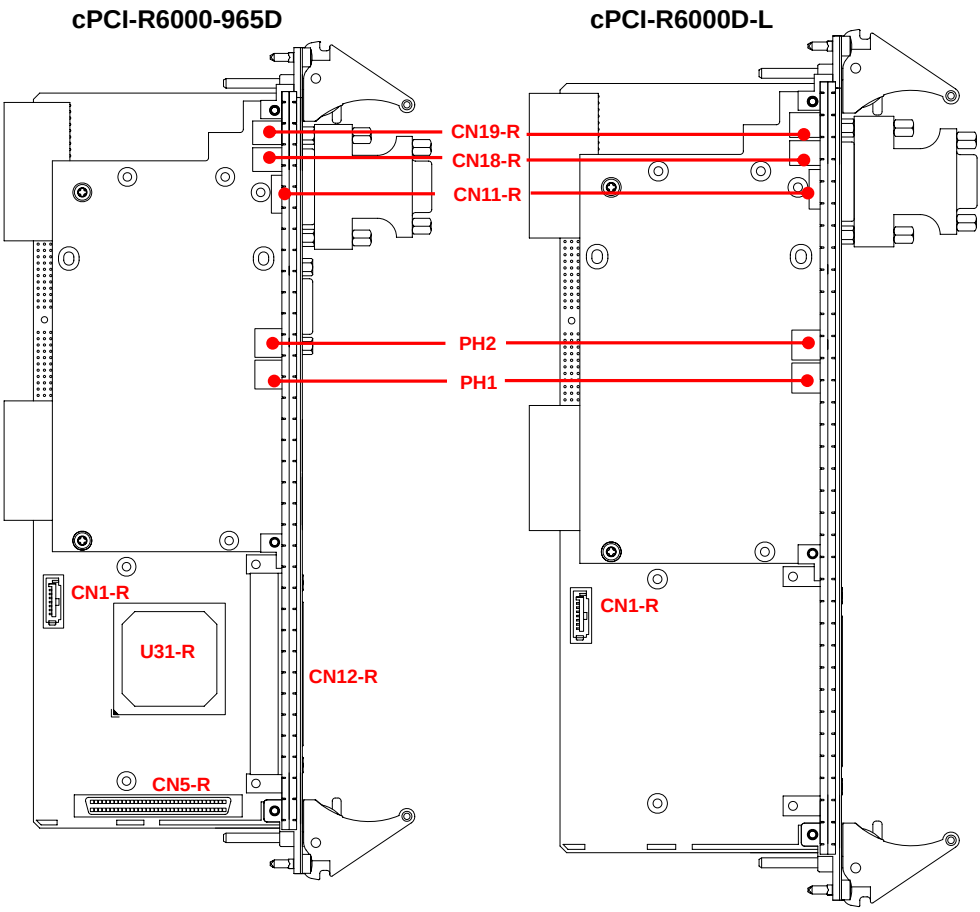


Figure 4-6: cPCI-R6000-965, cPCI-R6000-L Front Panel

4.7 cPCI-R6000-965D/6000D-L RTM Board Layout



CN18/19-R	USB ports	**CN12-R**	External SCSI connector
CN11-R	PS/2 KB/MS port	**CN5-R**	Internal SCSI connector
CN1-R	SATA port (7-pin)	**U31-R**	SCSI controller
PH1	Mic-in	**PH2**	Line-out

Figure 4-7: cPCI-R6000-965D, cPCI-R6000D-L Board Layout

4.8 cPCI-R6000-965D/R6000D-L RTM Front Panel

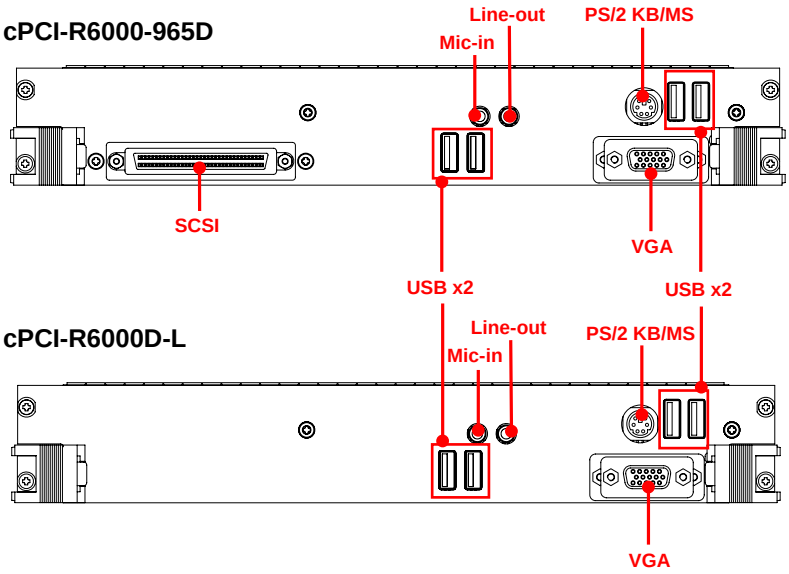


Figure 4-8: cPCI-R6000-965D, cPCI-R6000D-L Front Panel

4.9 Connector Pin Assignments

USB Connectors (CN9-12)

Pin #	Signal Name
1	Vcc
2	UV0-
3	UV0+
4	GND

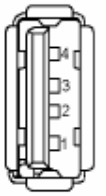


Table 4-2: USB Connector Pin Definition

PS/2 Keyboard/Mouse Connector

Pin #	Signal	Function
1	KBDATA	Keyboard Data
2	MSDATA	Mouse Data
3	GND	Ground
4	+5V	Power
5	KBCLK	Keyboard Clock
6	MSCLK	Mouse Clock

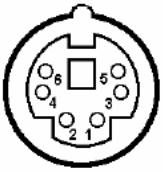
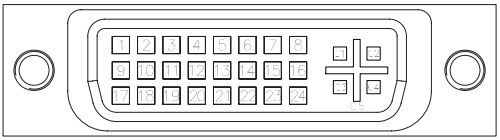


Table 4-3: PS/2 Keyboard/Mouse Connector Pin Definition

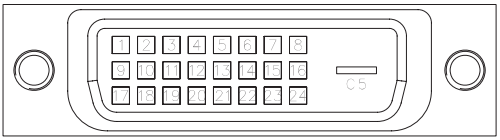
DVI-I Connector (CN2)



Pin #	Signal	Pin #	Signal
1	TMDS Data2-	16	Hot Plug Detect
2	TMDS Data2+	17	TMDS Data0-
3	TMDS Data2/4 Shield	18	TMDSData0+
4	TMDS Data4-	19	TMDS Data0/5 Shield
5	TMDS Data4+	20	TMDS Data5-
6	DDC Clock [SCL]	21	TMDS Data5+
7	DDC Data [SDA]	22	TMDS Clock Shield
8	Analog vertical sync	23	TMDS Clock +
9	TMDS Data1-	24	TMDS Clock -
10	TMDS Data1+	C1	Analog Red
11	TMDS Data1/3 Shield	C2	Analog Green
12	TMDS Data3-	C3	Analog Blue
13	TMDS Data3+	C4	Analog Horizontal Sync
14	+5 V Power	C5	Analog GND Return
15	GND		

Table 4-4: DVI-D Connector Pin Definition

DVI-D Connector (CN4)



Pin #	Signal	Pin #	Signal
1	TMDS Data2-	13	TMDS Data3+
2	TMDS Data2+	14	+5 V Power
3	TMDS Data2/4 Shield	15	GND
4	TMDS Data4-	16	Hot Plug Detect
5	TMDS Data4+	17	TMDS Data0-
6	DDC Clock [SCL]	18	TMDSData0+
7	DDC Data [SDA]	19	TMDS Data0/5 Shield
8	Analog vertical sync	20	TMDS Data5-
9	TMDS Data1-	21	TMDS Data5+
10	TMDS Data1+	22	TMDS Clock Shield
11	TMDS Data1/3 Shield	23	TMDS Clock +
12	TMDS Data3-	24	TMDS Clock -

Table 4-5: DVI-D Connector Pin Definition

COM1-2 DB-9 Serial Port Connector

Pin #	RS-232	RS422/485+	RS485
1	DCD, Data carrier detect	TXD-	Data-
2	RXD, Receive data	TXD+	Data+
3	TXD, Transmit data	RXD+	--
4	DTR, Data terminal ready	RXD	--
5	IsoGND, Isolated ground	GND	GND
6	DSR, Data set ready	--	--
7	RTS, Request to send	--	--
8	CTS, Clear to send	--	--
9	RI, Ring indicator	--	--

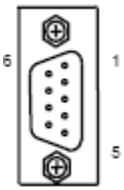


Table 4-6: COM1-2 Serial Port Connector Pin Definition

Parallel Port

Pin #	Signal Name	Pin #	Signal Name
1	STROBE	14	AUTO FEED
2	DATA0	15	ERROR
3	DATA1	16	INIT
4	DATA2	17	SELECT IN
5	DATA3	18	GND
6	DATA4	19	GND
7	DATA5	20	GND
8	DATA6	21	GND
9	DATA7	22	GND
10	ACKNOWLEDGE	23	GND
11	BUSY	24	GND
12	PAPER EMPTY	25	GND
13	SELECT		

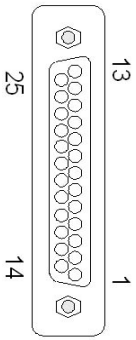
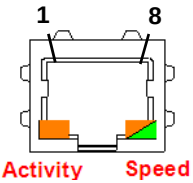


Table 4-7: Parallel Port Connector Pin Definition

RJ-45 Gigabit Ethernet Connectors (GbE1-2)

Pin #	Signal Name	Function
1	LANB_TX0P	Media Dependent Interface 1+
2	LANB_TX0N	Media Dependent Interface 1-
3	LANB_TX1P	Media Dependent Interface 2+
4	LANB_TX1N	Media Dependent Interface 2-
5	LANB_TX2P	Media Dependent Interface 3+
6	LANB_TX2N	Media Dependent Interface 3-
7	LANB_TX3P	Media Dependent Interface 4+
8	LANB_TX3N	Media Dependent Interface 4-

Table 4-8: GbE Connector Pin Definitions



Status		Speed LED (Green/Amber)	Activity LED (Amber)
Network link is not established or system powered off		OFF	OFF
10 Mbps	Link	OFF	ON
	Active	OFF	Blinking
100 Mbps	Link	Green	ON
	Active	Green	Blinking
1000 Mbps	Link	Amber	ON
	Active	Amber	Blinking

Table 4-9: Ethernet LED Status Definitions

Serial ATA Connectors (CN7, CN4-R)

Pin #	Signal
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

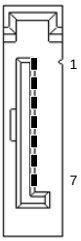


Table 4-10: SATA Connector Pin Definition

Serial ATA Connector on DB-6910SAT

Pin #	Signal
S1	GND
S2	TX+
S3	TX-
S4	GND
S5	RX-
S6	RX+
S7	GND
P1	NC
P2	NC
P3	NC
P4	GND
P5	GND
P6	GND
P7	5V
P8	5V
P9	5V
P10	GND
P11	Reserved
P12	GND
P13~P15	NC

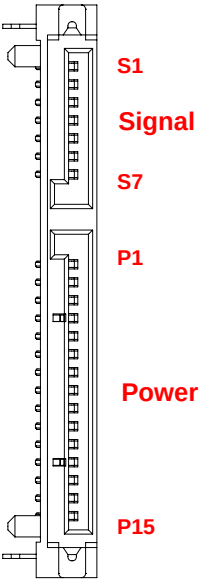


Table 4-11: DB-6910SAT SATA Connector Pin Definition

CompactFlash Connector (CN13)

Signal Name	Pin#	Pin#	Signal Name
GND	1	26	GND
DD3	2	27	DD11
DD4	3	28	DD12
DD5	4	29	DD13
DD6	5	30	DD14
DD7	6	31	DD15
CS1J	7	32	CS3J
GND	8	33	GND
GND	9	34	SDIORJ
GND	10	35	SDIOWJ
GND	11	36	5V
GND	12	37	IRQ15
5V	13	38	5V
GND	14	39	PCSEL
GND	15	40	NC
GND	16	41	BRSTDRVJ
GND	17	42	SDIORDY
DA2	18	43	NC
DA1	19	44	SDACKJ
DA0	20	45	IDEACTJ
DD0	21	46	DIAG
DD1	22	47	DD8
DD2	23	48	DD9
IOIS16J	24	49	DD10
GND	25	50	GND

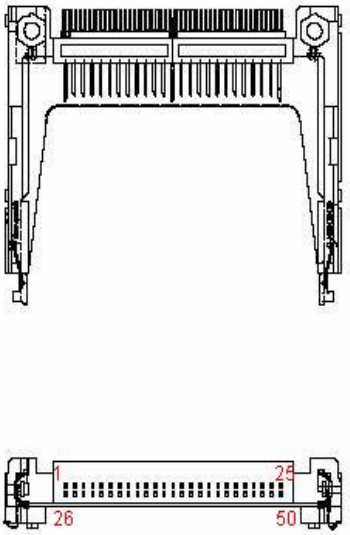
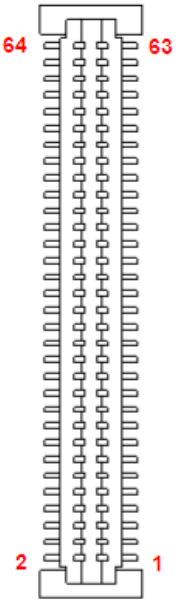


Table 4-12: CompactFlash Connector Pin Definition

PMC Connector (Upper1, Upper2)

Pin#	Upper1 Signal	Upper2 Signal
1	PMC_TCK	+12V
2	-12V	TRST#
3	GND	TMS
4	INTA#	NC
5	INTB#	TDI
6	INTC#	GND
7	MOD1#	GND
8	+5V	NC
9	INTD#	NC
10	NC	NC
11	GND	MODE2#
12	+3V3	+3.3V
13	CLK33	RST2#
14	GND	MODE3#
15	GND	+3.3V
16	GNT3#	MOD4#
17	REQ3#	PME#
18	+5V	GND
19	VIO	AD30
20	AD31	AD29
21	AD28	GND
22	AD27	AD26
23	AD25	AD24
24	GND	+3.3V
25	GND	IDSEL
26	CBE3#	AD23
27	AD22	+3.3V
28	AD21	AD20
29	AD19	AD18
30	+5V	GND
31	VIO	AD16
32	AD17	CBE2#
33	FRAME#	GND



Pin#	Upper1 Signal	Upper2 Signal
34	GND	NC
35	GND	TRDY#
36	IRDY#	+3.3V
37	DEVSEL#	GND
38	+5V	STOP#
39	PCIXCAP	PERR#
40	LOCK-L	GND
41	NC	+3.3V
42	NC	SERR#
43	PAR	CBE1#
44	GND	GND
45	VIO	AD14
46	AD15	AD13
47	AD12	M66EN
48	AD11	AD10
49	AD9	AD8
50	+5V	+3.3V
51	GND	AD7
52	CBE0#	NC
53	AD6	+3.3
54	AD5	NC
55	AD4	NC
56	GND	GND
57	VIO	NC
58	AD3	NC
59	AD2	GND
60	AD1	NC
61	AD0	ACK64#
62	+5V	+3.3V
63	GND	GND
64	REQ64#	NC

Table 4-13: PMC Connector Pin Definition

CompactPCI J1 Connector Pin Assignment

Pin	Z	A	B	C	D	E	F
1	GND	+5V	NC	TRST#	NC	+5V	GND
2	GND	TCK#	+5V	TMS#	NC	TDI#	GND
3	GND	IRQA#	IRQB#	IRQC#	+5V	IRQD#	GND
4	GND	+5V_IPMB	HEALTHY#	VIO	NC	NC	GND
5	GND	NC	NC	RESET#	GND	GNT0#	GND
6	GND	REQ0#	GND	NC	CLK0	AD31	GND
7	GND	AD30	AD29	AD28	GND	AD27	GND
8	GND	AD26	GND	VIO	AD25	AD24	GND
9	GND	CBE3#	NC	AD23	GND	AD22	GND
10	GND	AD21	GND	NC	AD20	AD19	GND
11	GND	AD18	AD17	AD16	GND	CBE2#	GND
12-14	Key						
15	GND	NC	FRAME#	IRDY#	NC	TRDY#	GND
16	GND	DEVSEL#	PCIXCAP	VIO	STOP#	LOCK#	GND
17	GND	NC	IPMB_CLK	IPMB_DAT	GND	PERR#	GND
18	GND	SERR#	GND	NC	PAR	CBE1#	GND
19	GND	NC	AD15	AD14	GND	AD13	GND
20	GND	AD12	GND	VIO	AD11	AD10	GND
21	GND	NC	AD9	AD8	M66EN	CBE0#	GND
22	GND	AD7	GND	NC	AD6	AD5	GND
23	GND	NC	AD4	AD3	+5V	AD2	GND
24	GND	AD1	+5V	VIO	AD0	ACK64#	GND
25	GND	+5V	REQ64#	ENUM#	NC	+5V	GND

Table 4-14: CompactPCI J1 Connector Pin Definition

CompactPCI J2 Connector Pin Assignment

Pin	Z	A	B	C	D	E	F
1	GND	CLK1	GND	REQ1#	GNT1#	REQ2#	GND
2	GND	CLK2	CLK3	SYSEN#	CGNT2#	REQ3#	GND
3	GND	CLK4	GND	GNT3#	REQ4#	GNT4#	GND
4	GND	VIO	NC	Pull up	GND	Pull up	GND
5	GND	Pull up	GND	VIO	Pull up	Pull up	GND
6	GND	Pull up	Pull up	Pull up	GND	Pull up	GND
7	GND	Pull up	GND	VIO	Pull up	Pull up	GND
8	GND	Pull up	Pull up	Pull up	GND	Pull up	GND
9	GND	Pull up	GND	VIO	Pull up	Pull up	GND
10	GND	Pull up	Pull up	Pull up	GND	Pull up	GND
11	GND	Pull up	GND	VIO	Pull up	Pull up	GND
12	GND	Pull up	Pull up	Pull up	VIO	Pull up	GND
13	GND	Pull up	GND	VIO	Pull up	Pull up	GND
14	GND	Pull up	Pull up	Pull up	GND	Pull up	GND
15	GND	NC	GND	FAL#	REQ5#	GNT5#	GND
16	GND	NC	NC	DEG#	GND	NC	GND
17	GND	NC	GNC	J2_RST#	REQ6#	GNT6#	GND
18	GND	NC	NC	NC	GND	NC	GND
19	GND	GND	GND	NC	NC	NC	GND
20	GND	CLK5	GND	NC	GND	NC	GND
21	GND	CLK6	GND	NC	NC	NC	GND
22	GND	GA4	GA3	GA2	GA1	GA0	GND

Table 4-15: CompactPCI J2 Connector Pin Definition

CompactPCI J3 Pin Assignment

Pin	Z	A	B	C	D	E	F
1	GND	HDA_RST-L	HDA_SYNC	HDA_BIT_CLK	HDA_SDOUT	HAD_SDIN0	GND
2	GND	HAD_SDIN1	HAD_SDIN2	HAD_SDIN3	NC	NC	GND
3	GND	PS2-KBD	PS2-KBC	NC	PS2-MSD	PS2-MSC	GND
4	GND	SATA-T2P	SATA-T2N	GND	NC	NC	GND
5	GND	GND	GND	NC	GND	GND	GND
6	GND	SATA-R2P	SATA-R2N	GND	NC	NC	GND
7	GND	NC	NC	NC	I2C_CLK	I2C_DAT	GND
8	GND	NC	NC	NC	NC	NC	GND
9	GND	NC	NC	RGB-BLUE	RGB-RED	RGB-GREEN	GND
10	GND	USB-OC#	RGB-DDCCLK	RGB-DDCDAT	RGB-HSYNC	RGB-VSYNC	GND
11	GND	USB-P8	USB-N8	GND	USB-P9	USB-N9	GND
12	GND	USB-P6	USB-N6	GND	USB-P7	USB-N7	GND
13	GND	NC	NC	GND	USB-P5	USB-N5	GND
14	GND	NC	USB-OC5#	USB-OC6#	USB-OC7#	USB-OC8#	GND
15	GND	NC	NC	GND	NC	NC	GND
16	GND	NC	NC	GND	NC	NC	GND
17	GND	NC	NC	GND	NC	NC	GND
18	GND	NC	NC	GND	NC	NC	GND
19	GND	+5V	+5V	+12V	+5V	+5V	GND

Table 4-16: CompactPCI J3 Connector Pin Definition

High Definition Audio
PS/2 Keyboard/Mouse
Serial ATA
RGB
USB port
I2C

CompactPCI J5 Pin Assignment

Pin	Z	A	B	C	D	E	F
1	GND	PCIE-TX0+	PCIE-TX0-	GND	PCIE-RX0+	PCIE-RX0-	GND
2	GND	PCIE-TX1+	PCIE-TX1-	GND	PCIE-RX1+	PCIE-RX1-	GND
3	GND	PCIE-TX2+	PCIE-TX2-	GND	PCIE-RX2+	PCIE-RX2-	GND
4	GND	PCIE-TX3+	PCIE-TX3-	GND	PCIE-RX3+	PCIERX3-	GND
5	GND	GND	GND	GND	GND	GND	GND
6	GND	CLK0+	CLK0-	GND	RESET#	NC	GND
7	GND	NC	NC	NC	NC	NC	GND
8	GND	NC	NC	NC	NC	NC	GND
9	GND	GPIO0	GPIO1	GPIO2	GPIO3	GPIO4	GND
10	GND	NC	NC	GND	NC	NC	GND
11	GND	NC	NC	GND	NC	NC	GND
12	GND	NC	NC	NC	NC	NC	GND
13	GND	NC	NC	NC	NC	NC	GND
14	GND	NC	NC	GND	NC	NC	GND
15	GND	NC	NC	NC	NC	NC	GND
16	GND	MTR0#	INDEX#	GPIO6	FDEDIN#	DENSEL#	GND
17	GND	DIR#	NC	GPIO7	DSEL0#	NC	GND
18	GND	TRK0#	WGATE#	GPIO9	WDATA#	STEP#	GND
19	GND	DSKCHG#	HDSEL#	NC	RDATA#	WRPORT#	GND
20	GND	NC	NC	GND	NC	NC	GND
21	GND	NC	NC	GND	NC	NC	GND
22	GND	NC	NC	NC	NC	NC	GND

Table 4-17: CompactPCI J5 Connector Pin Definition

PCI-Express x4
GPIO
Floppy

4.10 Switch and Jumper Settings

COM1 Mode Selection Switches (SW1~SW4)

This is switch is to select COM1 to be RS-232 full modem or RS-422, RS-485, RS-485+ half Duplex mode. RS-232 full modem is set by default.

	Location	SW1	SW2	SW3	SW4
RS-232 Full Modem	1	OFF	ON	ON	ON
	2	OFF	OFF	OFF	OFF
	3	OFF	OFF	ON	ON
	4	OFF	OFF	OFF	OFF
RS-422 Half Duplex	1	ON	OFF	OFF	OFF
	2	ON	ON	ON	ON
	3	OFF	OFF	OFF	OFF
	4	OFF	OFF	ON	ON
RS-485 Half Duplex	1	ON	OFF	OFF	OFF
	2	ON	OFF	ON	ON
	3	OFF	ON	OFF	OFF
	4	OFF	OFF	ON	ON
RS-485+ Half Duplex	1	OFF	OFF	OFF	OFF
	2	OFF	OFF	ON	ON
	3	ON	OFF	OFF	OFF
	4	ON	ON	ON	ON

Table 4-18: COM1 Mode Switch Settings

COM2 Mode Selection Switches (SW5~SW8)

This is switch is to select COM2 to be RS-232 full modem or RS-422, RS-485, RS-485+ half Duplex mode. RS-232 full modem is set by default.

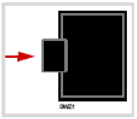
SW5 SW6 SW7 SW8

	Location	SW5	SW6	SW7	SW8
RS-232 Full Modem	1	OFF	ON	ON	ON
	2	OFF	OFF	OFF	OFF
	3	OFF	ON	OFF	ON
	4	OFF	OFF	OFF	OFF
RS-422 Half Duplex	1	ON	OFF	OFF	OFF
	2	ON	ON	ON	ON
	3	OFF	OFF	OFF	OFF
	4	OFF	ON	OFF	ON
RS-485 Half Duplex	1	ON	OFF	OFF	OFF
	2	ON	ON	OFF	ON
	3	OFF	OFF	ON	OFF
	4	OFF	ON	OFF	ON
RS-485+ Half Duplex	1	OFF	OFF	OFF	OFF
	2	OFF	ON	OFF	ON
	3	ON	OFF	OFF	OFF
	4	ON	ON	ON	ON

Table 4-19: COM2 Mode Switch Settings

Clear CMOS Switch (SW9)

The cPCI-6965 series comes with a Clear CMOS switch to reset the CMOS values to default. Press the Switch SW9 located near the J1 connector to clear the CMOS.



PMC V(I/O) Select Jumper (JPX1)

JPX1 is a three pin jumper for +3.3V or 5V PMC VIO signaling selection.

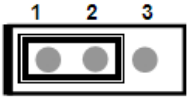
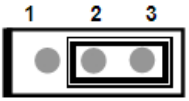
Status	JPX1
5V	
3.3V (Default)	

Table 4-20: PMC V(I/O) Select Jumper Settings

NOTE: Pin 1 of JPX1 is indicated by the thicker line printed on the PCB.

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5 Getting Started

This chapter describes the installation of the following components to the cPCI-6965 and rear transition modules:

- Memory module
- CompactFlash card
- 2.5” SATA hard drive
- PMC module
- USB Flash Disk module
- cPCI-6965 CPU module installation to chassis
- RTM installation to chassis

5.1 CPU and Heatsink

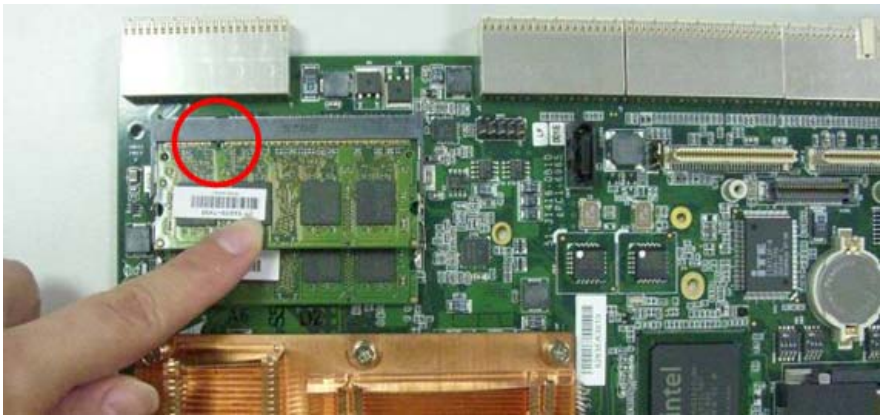
The cPCI-6965 Series comes with CPU and heatsink pre-installed. Uninstalling the heatsink is not recommended. If it is necessary to do so, please check that the thermal pad is not damaged before you re-install the heatsink to the board. Contact ADLINK to obtain the appropriate thermal pad for the cPCI-6965 or for any other assistance.

5.2 Memory Module Installation

The cPCI-6965 Series supports DDR2-667 unbuffered non-ECC memory modules via two stacked-type SO-DIMM sockets. The SO-DIMM modules have a 200-pin footprint and are notched to facilitate correct installation in the SO-DIMM sockets. At lease one memory module will be pre-installed in the lower socket.

Installing the Memory Modules

Align the notch in the memory module with the key on the SO-DIMM slot. Press down on the module until is it is properly seated in the socket.



5.3 CompactFlash Card Installation

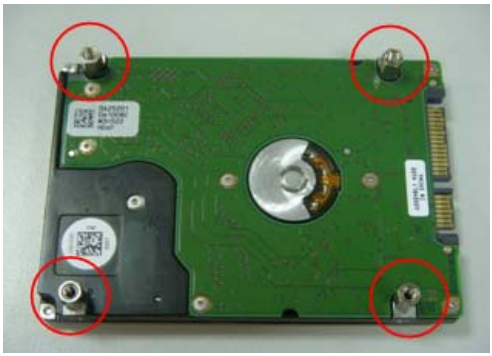
1. Remove the card retaining bracket from board by removing the two screws as shown.

2. Insert the CF card into the CF slot, then replace the card retaining bracket to prevent the CF card from sliding out of the slot.

5.4 Hard Drive Installation

The cPCI-6965 Series provides space to install a slim type 2.5" Serial-ATA hard drive and comes with the required installation hardware. The HDD adapter kit includes screws, standoffs and SATA adapter board (DB-6910SAT).

1. Attach the four standoffs provided with the HDD adapter kit onto the SATA hard drive as shown below.

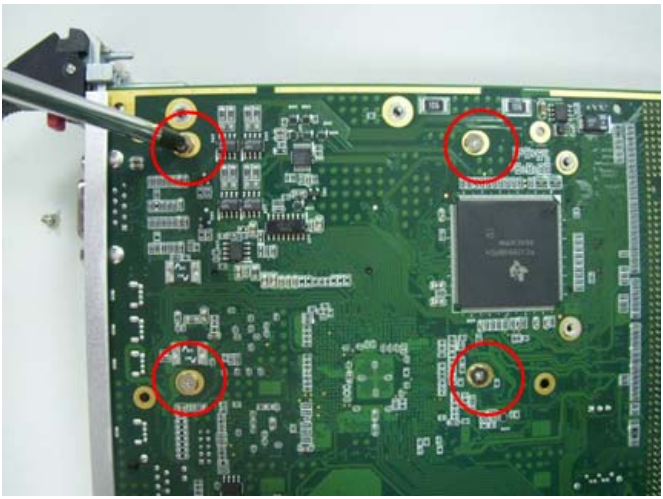


2. Attach the DB-6910SAT adapter board to the hard drive connectors.

3. Position the hard drive assembly on the cPCI-6965 so that the standoffs on the hard drive align with the screw holes on the board, and the connector on the DB-6910SAT adapter board is aligned with the board-to-board connector (CN14).

4. Press the DB-6910SAT adapter to the board-to-board connector until it is properly seated. Secure the adapter to the board with the two screws provided.

5. Secure the hard drive with four screws from the board's solder side.



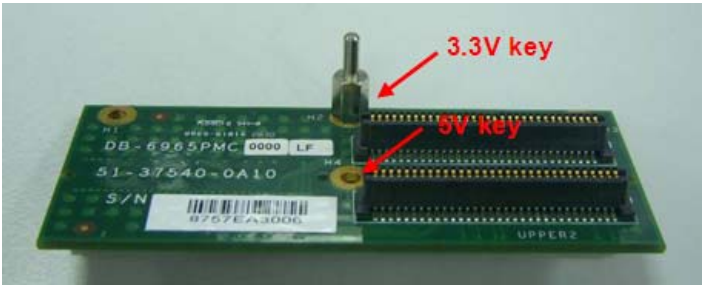
CAUTION:

When removing the hard drive, be careful to grasp the adapter board and lift upwards in a vertical motion to disconnect it from the board-to-board connector. This will avoid damaging the adapter board and connectors.

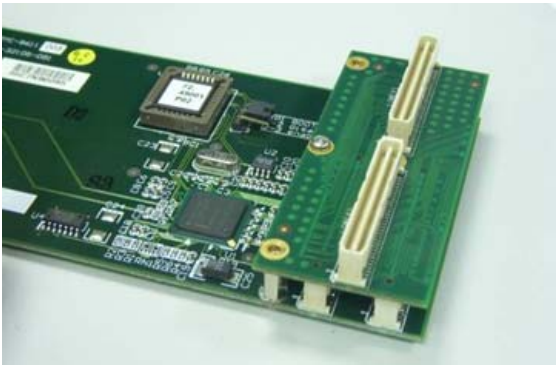
5.5 PCI Mezzanine Card (PMC) Installation

The PMC slot is designed to support 3.3V and 5V V(I/O), and the default setting is 3.3V. Before you install the PMC module on the cPCI-6965, please make sure that the PMC V(I/O) jumper JPX1 has been correctly set (see **"PMC V(I/O) Select Jumper (JPX1)" on page 47**).

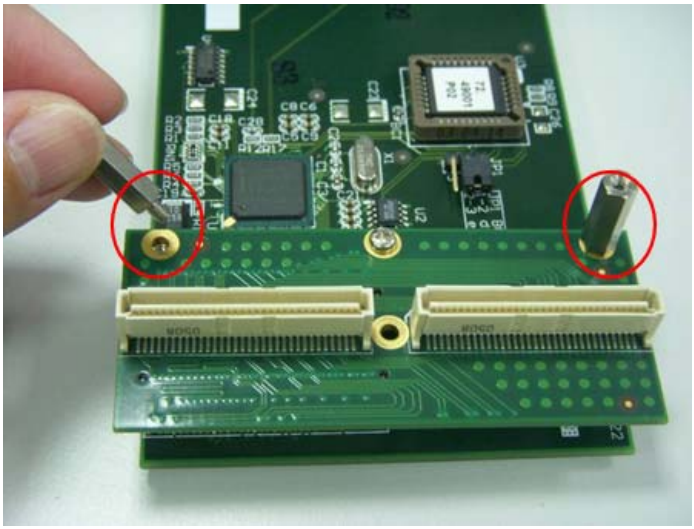
1. There is a 3.3V key on the DB-6965PMC by default, if the PMC module you wish to install is 5V signaling, please switch the key to the 5V location and set the PMC V(I/O) jumper JPX1 to the 5V setting.



2. Attach the DB-6965PMC adapter board onto the PMC module as shown.

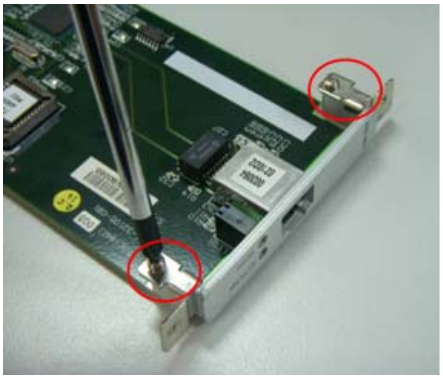


3. Secure the standoffs provided in the package to the PMC assembly as shown.

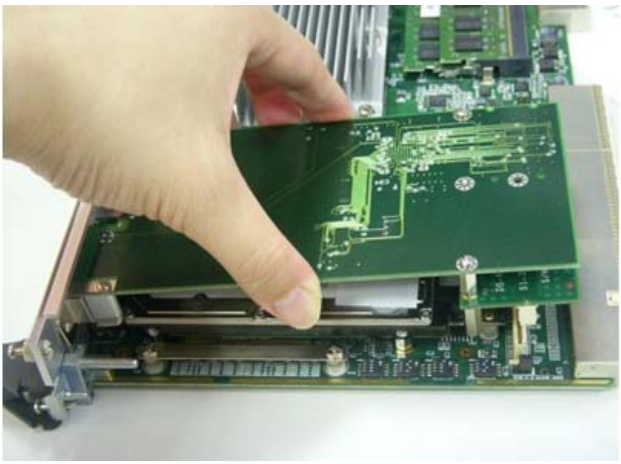


4. Remove the two PMC brackets and PMC faceplate from the front panel.

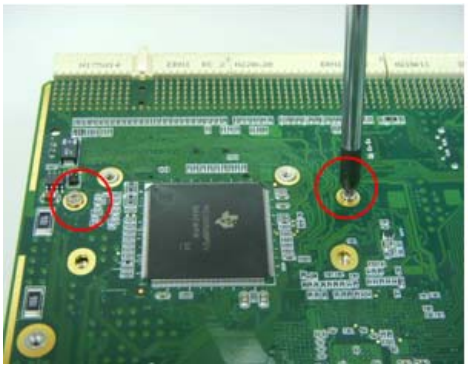
5. Secure the two PMC brackets to the both sides of the PMC front panel.

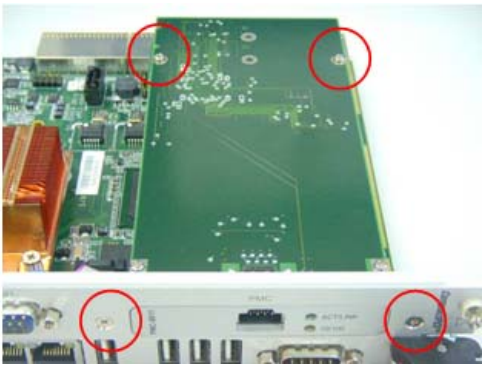


6. Align the male PMC connectors of the DB-6965PMC adapter board (component-side down) to the female PMC connectors of the host board and press down.



7. Secure the PMC assembly to the host board with the six screws provided as shown.

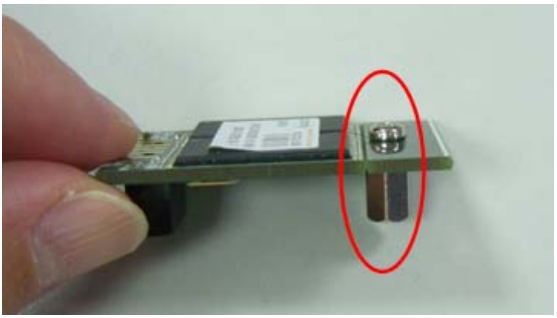




5.6 USB Flash Disk Module Installation

The cPCI-6965 Series supports an onboard USB Flash Disk module via the CN5 pin header connector. To install a USB Flash Disk, follow the procedure below.

1. Secure the standoff to the underside of the USB module with the screw provided.



2. Align the USB module with the CN5 pin header and mounting hole as shown.

3. Insert the USB module onto the pin header and secure with the screw provided from the solder side of the cPCI-6965.

5.7 Installing the cPCI-6965 to the Chassis

The cPCI-6965 may be installed in a system or peripheral slot of a 6U CompactPCI chassis. These instructions are for reference only. Refer to the user guide that comes with the chassis for more information.

1. Be sure to select the correct slot depending on the operational purpose of the module. The system power may now be powered on or off.
2. Remove the blank face cover from the selected slot, if necessary.
3. Press down on the release catches of the cPCI-6965 ejector handles.
4. **Remove the black plastic caps securing the mounting screws to the front panel.**
5. Align the module's top and bottom edges to the chassis card guides, and then carefully slide the module into the chassis. A slight resistance may be felt when inserting the module. If the resistance it too strong, check if there are bent pins on the backplane or if the board's connector pins are not properly aligned with connectors on the backplane. Then push the board until it is completely flush with the chassis.
6. Push the ejector handles outwards to secure the module in place, and then fasten the screws on the module front panel.
7. Connect the cables and peripherals to the board, and then turn the chassis on if necessary.

5.8 RTM Installation

The installation and removal procedures for a RTM are the same as those for CompactPCI boards. Because they are shorter than front boards, pay careful attention when inserting or removing RTMs.

Refer to previous sections for peripheral connectivity of all I/O ports on the RTM. When installing the cPCI-6965 Series and related RTMs, make sure the RTM is the correct matching model.

You must install the correct RTM to enable functions (I/O interfaces) on the rear panel. Installation of non-compatible RTMs may damage the system board and/or other RTMs.

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6 Driver Installation

6.1 Chipset Drivers

The cPCI-6965 drivers are available from the ADLINK All-In-One CD at **X:\cPCI\cPCI-6965**, or from the ADLINK website (**http://www.adlinktech.com**). The following describes the driver installation procedures for Windows® XP.

1. Install the Windows operating system before installing any driver. Most standard I/O device drivers are installed during Windows installation.
2. Install the chipset driver by running the program **...\Chipset\infinst_autol[9.0.0.1008].exe**.
3. Install the VGA driver and utilities by running the program **...\Graphics\Windows XP Professional\win2k_xp1434.exe**.
4. Install the LAN drivers by running the program **...\LAN\Windows XP Professional\PRO2KXP[13.0].exe**.
5. Install the SCSI driver for RTM cPCI-R6000-965(D) if required. Refer to “SCSI Driver” on page 64.

We recommend using the chipset, VGA, and LAN drivers provided on the ADLINK All-in-One CD or downloaded from the ADLINK website to ensure compatibility. Contact ADLINK to get support for Linux and VxWorks BSP drivers.

6.2 SCSI Driver

The SCSI driver is available from the ADLINK All-In-One CD at **X:cPCI\cPCI-6920\SCSI** or from the ADLINK website (**http://www.adlinktech.com**) and the installation procedure for Windows XP is described below.

1. Click **Start**, right-click on **My Computer**, then select **Properties** from the drop-down menu.
2. Click on the **Hardware** tab, then click **Device Manager.**
3. Right-click on the **SCSI Controller** item, then click **Properties** from the drop-down menu.
4. From the **General** tab, click **Reinstall Driver**.
5. Select **Yes, this time only** and click **Next** when the **Upgrade Device Driver Wizard** window appears.
6. Select **Install** from a list on specific location [Advanced], then click **Next**.
7. Uncheck **Search removable media** [floppy, CD-ROM...], and check **Include this location** in the search:, then click **Browse**.
8. Select the **xp_x86** folder from this directory on the ADLINK All-In-One CD: **…X:\cPCI\cPCI-6920\SCSI**.
9. Click **OK**, then click **Next**.
10. Click **Continue Anyway** to go on, and click **Finish** to complete the installation.

7 Utilities

7.1 Watchdog Timer

This section describes the operation of the cPCI-6965's watchdog timer (WDT). The primary function of the WDT is to monitor the cPCI-6965's operation and to reset the system if a software application fails to function as programmed. The following WDT functions may be controlled using a software application:

- enabling and disabling
- reloading timeout value

The cPCI-6965 custom WDT circuit is implemented using the internal IO of the ITE SuperIO IT8712F which is at 2Eh of LPC. The basic functions of the WDT include:

- Starting the timer countdown
- Enabling or disabling WDT
- Enabling or disabling WDT countdown LED ON
- Reloading the timeout value to keep the watchdog from timing out
- Setting the range of the timeout period from 1 to 15300 seconds
- Sending a RESET signal to the system when the watchdog times out

Using the Watchdog in an Application

The following section describes using the WDT functions in an application. The WDT reset function is explained in the previous section. This can be controlled through the registers in the cPCI-6965's SuperIO.

An application using the reset feature enables the watchdog function, sets the count-down period, and reloads the timeout value periodically to keep it from resetting the system. If the timer countdown value is not reloaded, the watchdog resets the system hardware after its counter reaches zero.

For a detailed programming sample, refer to the sample code provided on the ADLINK All-In-One CD. You can find it in the following directory: **X:\cPCI\cPCI-6965\WDT**.

Sample Code

The sample program written in C shown below offers an interactive way to test the Watchdog Timer under DOS.

```
#include<stdio.h>
#include<dos.h>

static unsigned int IT8712_ioPort = 0x2e;

void Enter_IT8712_Config(unsigned int flag)
{
     if(flag) IT8712_ioPort = 0x4e;
     else IT8712_ioPort = 0x2e;

     switch(IT8712_ioPort)
     {
          case 0x2E:  //Address port = 0x2E, enter keys =
     0x87, 0x01, 0x55, 0x55
               outportb(0x2E, 0x87);
               outportb(0x2E, 0x01);
               outportb(0x2E, 0x55);
               outportb(0x2E, 0x55);
               break;
          case 0x4E:  //Address port = 0x4E, enter keys =
     0x87, 0x01, 0x55, 0xAA
               outportb(0x4E, 0x87);
               outportb(0x4E, 0x01);
               outportb(0x4E, 0x55);
               outportb(0x4E, 0xAA);
               break;
          default:
               break;
        }
}

void Exit_IT8712_Config(unsigned int flag)
{
     if(flag) IT8712_ioPort = 0x4e;

     outportb(IT8712_ioPort, 0x02);
     outportb(IT8712_ioPort+1, 0x02);
}
```

```
void Get_IT8712_ID(unsigned int &ID1, unsigned int &ID2)
{
     outportb(IT8712_ioPort, 0x20);
     ID1 = inportb(IT8712_ioPort+1);
     outportb(IT8712_ioPort, 0x21);
     ID2 = inportb(IT8712_ioPort+1);
}

void IT8712_WDTRun(unsigned int count_value)
{
     unsigned int tempCount, registerValue;

     outportb(IT8712_ioPort, 0x07);
     outportb(IT8712_ioPort+1, 0x07);// Device 7

     if(count_value >= 60)
     {
          outportb(IT8712_ioPort, 0x72);
          registerValue = inportb(IT8712_ioPort+1);
          registerValue &= 0x7f;
          registerValue |= 0x40; //enable WDT output
     through KBRST
          outportb(IT8712_ioPort+1, registerValue); //
     set WDT count is minute

          tempCount = count_value / 60;
          if((count_value%60) > 30)
               tempCount++;
          if(tempCount > 255)
               tempCount = 255;
          printf("WDT timeout in %d minutes.\n",
     tempCount);
     }
     else
     {
          outportb(IT8712_ioPort, 0x72);
          registerValue = inportb(IT8712_ioPort+1);
          registerValue |= 0x80;

          tempCount = count_value;
          if(tempCount != 0)
          {
```

```
            printf("WDT timeout in %d seconds.\n",
tempCount);
            registerValue |= 0x40; //Enable WDT
output through KBRST
      }
      else
      {
            printf("WDT is Disabled.\n");
            registerValue &= 0xbf; //Disable WDT
output through KBRST
      }

      outportb(IT8712_ioPort+1, registerValue); //
set WDT count is second
}

outportb(IT8712_ioPort, 0x71);
registerValue = inportb(IT8712_ioPort + 1);
registerValue |= 0x60;// set Mouse & Keyboard
interrupt Enable
outportb(IT8712_ioPort+1, registerValue);

outportb(IT8712_ioPort, 0x73);
outportb(IT8712_ioPort+1, tempCount);
```

7.2 Preboot Execution Environment (PXE)

The cPCI-6965 series supports the Intel® Preboot Execution Environment (PXE) that is capable of booting up or executing an OS installation through an Ethernet ports. To use PXE, there must be a DHCP server on the network with one or more servers running PXE and MTFTP services. It could be a Windows® 2003 server running DHCP, PXE, and MTFTP services or a dedicated DHCP server with one or more additional servers running PXE and MTFTP services.

To build a network environment with PXE support:

1. Setup a DHCP server with PXE tag configuration
2. Install the PXE and MTFTP services
3. Make a boot image file on the PXE server (i.e. the boot server)
4. Enable the PXE boot function on the client computer

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8 BIOS Setup Utility

The following chapter describes basic navigation for the AMIBIOS®8 BIOS setup utility.

8.1 Starting the BIOS

To enter the setup screen, follow these steps:

1. Power on the motherboard
2. Press the < Delete > key on your keyboard when you see the following text prompt:
   < Press DEL to run Setup >
3. After you press the < Delete > key, the main BIOS setup menu displays. You can access the other setup screens from the main BIOS setup menu, such as Chipset and Power menus.

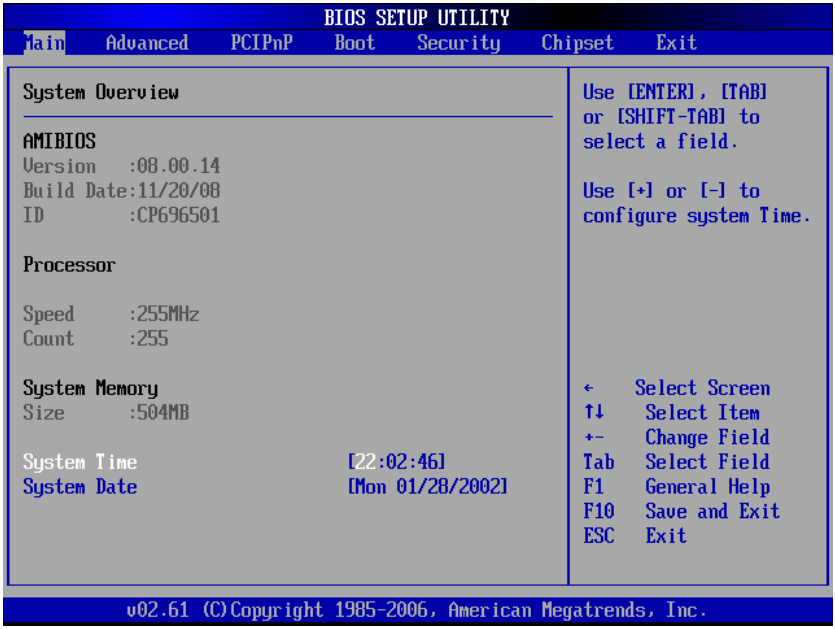
Note: In most cases, the < Delete > key is used to invoke the setup screen. There are several cases that use other keys, such as < F1 >, < F2 >, and so on.

Setup Menu

The main BIOS setup menu is the first screen that you can navigate. Each main BIOS setup menu option is described in this user's guide.

The Main BIOS setup menu screen has two main frames. The left frame displays all the options that can be configured. "Grayed" options cannot be configured, "Blue" options can be.

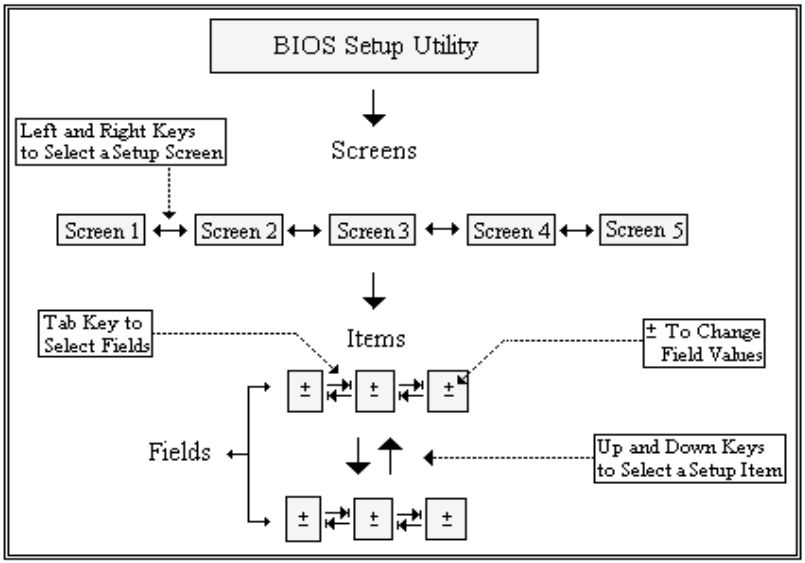
The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it.



Navigation

The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process.

These keys include < F1 >, < F10 >, < Enter >, < ESC >, < Arrow > keys, and so on. .



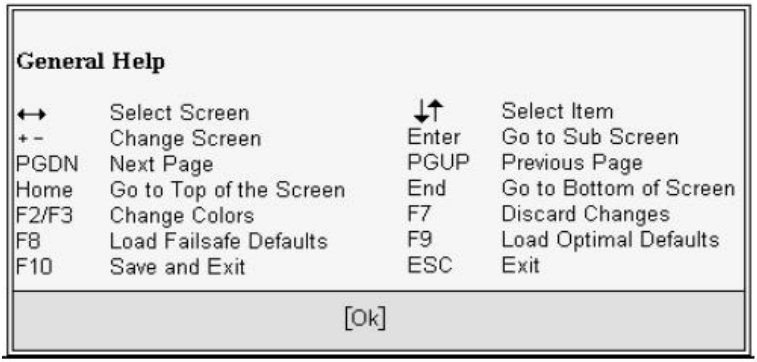
Note: There is a hot key legend located in the right frame on most setup screens.

The < F8 > key on your keyboard is the Fail-Safe key. It is not displayed on the key legend by default. To set the Fail-Safe settings of the BIOS, press the < F8 > key on your keyboard. It is located on the upper row of a standard 101 keyboard. The Fail-Safe settings allow the motherboard to boot up with the least amount of options set. This can lessen the probability of conflicting settings.

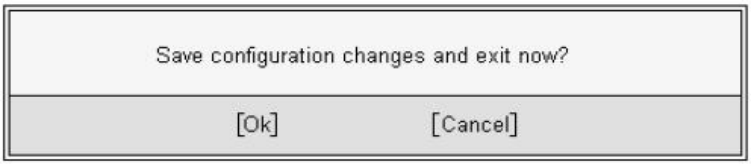
Hotkey Descriptions

F1 The < F1 > key allows you to display the General Help screen.

Press the < F1 > key to open the General Help screen.

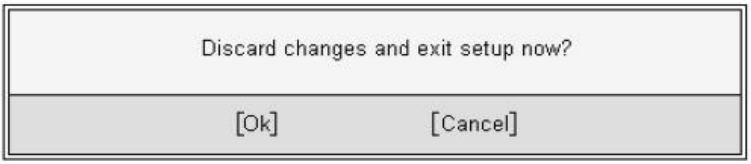


F10 The < F10 > key allows you to save any changes you have made and exit Setup. Press the < F10 > key to save your changes. The following screen will appear:



Press the < Enter > key to save the configuration and exit. You can also use the < Arrow > key to select Cancel and then press the < Enter > key to abort this function and return to the previous screen.

ESC The < Esc > key allows you to discard any changes you have made and exit the Setup. Press the < Esc > key to exit the setup without saving your changes. The following screen will appear:

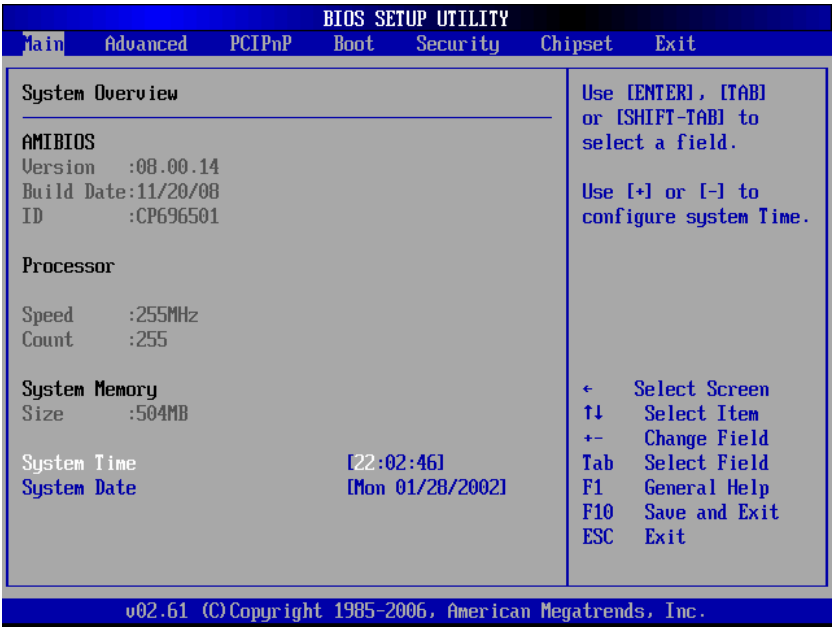


Press the < Enter > key to discard changes and exit. You can also use the < Arrow > key to select Cancel and then press the < Enter > key to abort this function and return to the previous screen.

Enter The < Enter > key allows you to display or change the setup option listed for a particular setup item. The < Enter > key can also allow you to display the setup sub-screens.

8.2 Main Setup

When you first enter the Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab. There are two Main Setup options. They are described in this section. The Main BIOS Setup screen is shown below.



System Time/System Date

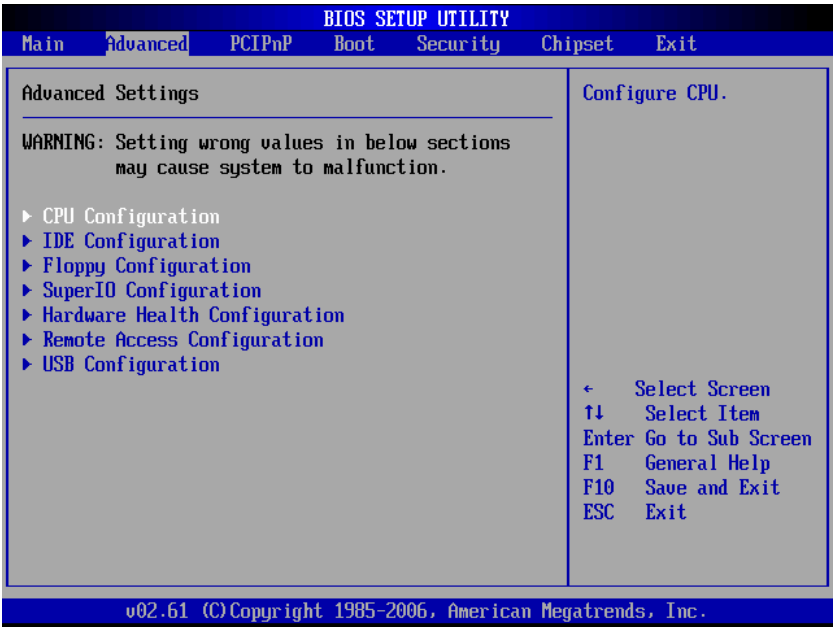
Use this option to change the system time and date. Highlight System Time or System Date using the < Arrow > keys. Enter new values using the keyboard. Press the < Tab > key or the < Arrow > keys to move between fields. The date must be entered in MM/DD/YY format. The time is entered in HH:MM:SS format.

Note: The time is in 24-hour format. For example, 5:30 A.M. appears as 05:30:00, and 5:30 P.M. as 17:30:00.

8.3 Advanced BIOS Setup

Select the Advanced tab from the setup screen to enter the Advanced BIOS Setup screen. You can select any of the items in the left frame of the screen, such as SuperIO Configuration, to go to the sub menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the < Arrow > keys. The Advanced BIOS Setup screen is shown below.

The sub menus are described on the following pages.



CPU Configuration

You can use this screen to select options for the CPU Configuration Settings. Use the up and down < Arrow > keys to select an item. Use the < + > and < - > keys to change the value of the selected option. A description of the selected item appears on the right side of the screen. The settings are described on the follow-

ing pages. An example of the CPU Configuration screen is shown below.

BIOS SETUP UTILITY
Advanced
Configure advanced CPU settings
Module Version:3F.03
Manufacturer:Intel
Frequency :255MHz
FSB Speed :92MHz
Cache L1 :0 KB
Cache L2 :0 KB
Ratio Actual Value:11
Intel(R) Virtualization Tech [Enabled]
Core Multi-Processing [Enabled]
Intel(R) SpeedStep(tm) tech [Enabled]
Intel(R) C-STATE tech [Disabled]
When enabled, a VMM can utilize the additional HW Caps. provided by Intel(R) Virtualization Tech. Note: A full reset is requried to change the setting.
← Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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Intel(R) Virtualization Tech

Intel Virtualization Technology is a set of platform features that support virtualization of platform hardware and multiple software environmentss. When enabled, it offers data center managers the ability to consolidate multiple workloads on one physical server system.

Core Multi-Processing

This item enables/disables multi-core processing functionality for multi-core processors.

Intel®Speedstep™ Tech

Intel SpeedStep technology allows the system to dynamically adjust processor voltage and core frequency, which can result

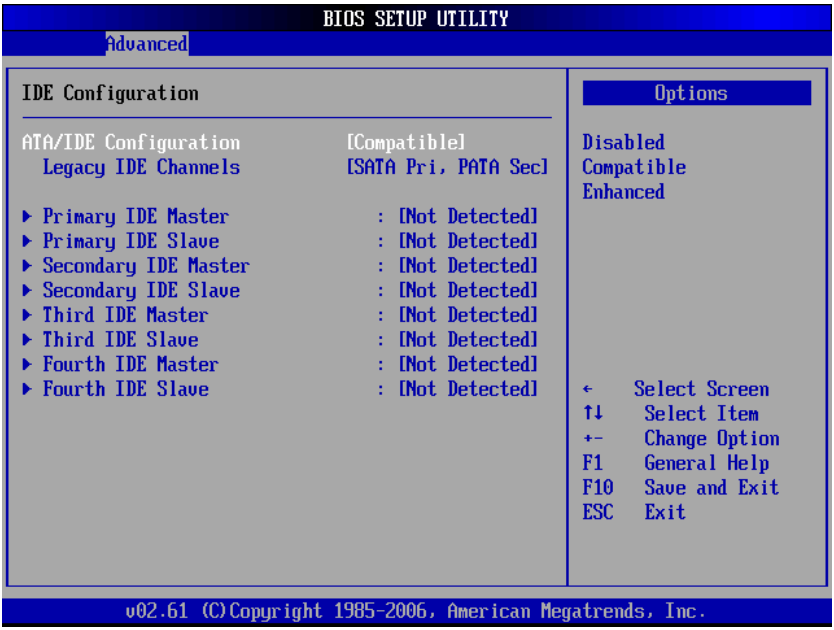
in decreased average power consumption and decreased average heat production.

Intel® C-STATE Tech

This option allows you to enable or disabled Intel C-STATE function.

IDE Configuration

You can use this screen to select options for the IDE Configuration Settings. Use the up and down < Arrow > keys to select an item. Use the < + > and < - > keys to change the value of the selected option. A description of the selected item appears on the right side of the screen. The settings are described on the following pages. An example of the IDE Configuration screen is shown below.



ATA/IDE Configuration

This item specifies which mode the IDE channels should be initialized in. The settings are **Disabled**, **Compatible** and **Enhanced**.

Legacy IDE Channels

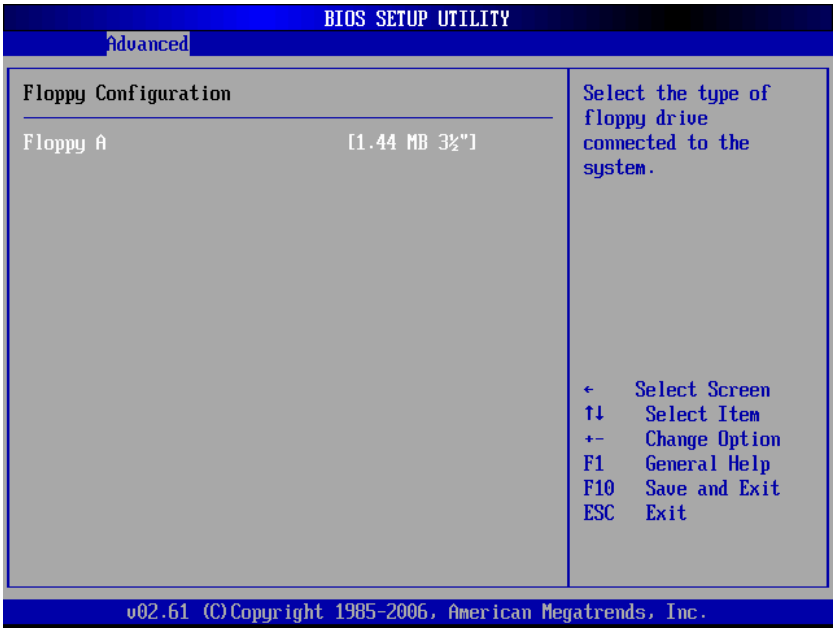
When running in Compatible mode, SATA channels can be configured as a legacy IDE channels. Use this option to elect the location of the IDE channel.

IDE Master/Slave

Select one of the hard disk drives to configure it. Press < Enter > to access its sub menu.

Floppy Configuration

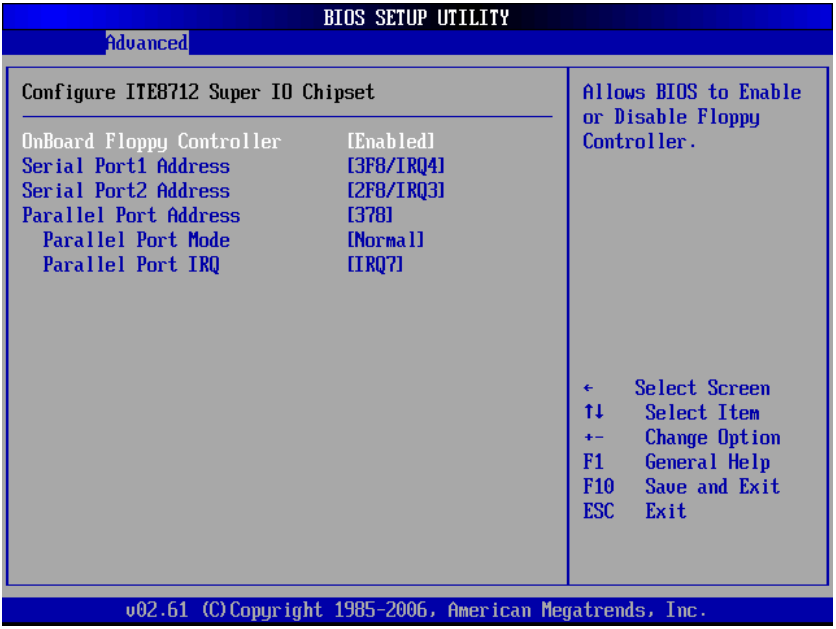
You can use this screen to specify options for the Floppy Configuration Settings. Use the up and down < Arrow > keys to select an item. Use the < + > and < - > keys to change the value of the selected option. The settings are described on the following pages. The screen is shown below.



Options: Disabled, 360 KB 5 ¼", 1.2 MB 5 ¼", 720 KB 3 ½", 1.44 MB 3 ½", 2.88 MB 3 ½".

Super IO Configuration

You can use this screen to select options for the Super IO settings. Use the up and down < Arrow > keys to select an item. Use the < + > and < - > keys to change the value of the selected option. The settings are described on the following pages. The screen is shown below.



Onboard Floppy Controller

Options: Disabled, Enabled

Serial Port1 Address

Select an address and a corresponding interrupt for Serial Port1. **Options:** 3F8/IRQ4, 3E8/IRQ4, 2F8/IRQ3, 2E8/IRQ3.

Serial Port2 Address

This option specifies the base I/O port address and Interrupt Request address of Serial Port2. The settings of Serial Port2 are the same as Serial Port1. However, the setting used by Serial Port1 will not be available for Serial Port2. For example,

if Serial Port1 uses 3F8/IRQ4, the option, the 3F8/IRQ4 will not appear in the options of Serial Port2.

Parallel Port Address

This option specifies the base I/O port address of the parallel port.

Parallel Port Mode

This option specifies the parallel port mode.

- **Normal**: Set this value to allow the standard parallel port mode to be used.
- **EPP**: The parallel port can be used with devices that adhere to the Enhanced Parallel Port (EPP) specification. EPP uses the existing parallel port signals to provide asymmetric bi-directional data transfer driven by the host device.
- **ECP**: The parallel port can be used with devices that adhere to the Extended Capabilities Port (ECP) specification. ECP uses the DMA protocol to achieve data transfer rates up to 2.5 Megabits per second. ECP provides symmetric Bi-directional communication.
- **EPP+ECP:** Allow the parallel port to support both the ECP and EPP modes simultaneously.

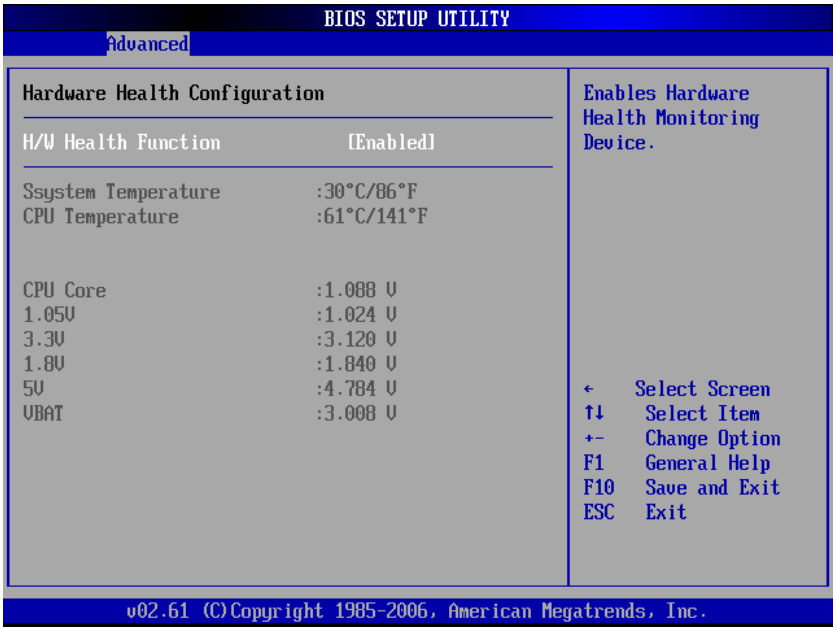
Parallel Port IRQ

This option specifies the IRQ used by the parallel port.

- **IRQ5:** Set this value to allow the serial port to use Interrupt 5.
- **IRQ7:** Set this value to allow the serial port to use Interrupt 7. The majority of parallel ports on computer systems use IRQ7 and I/O Port 378H as the standard setting.

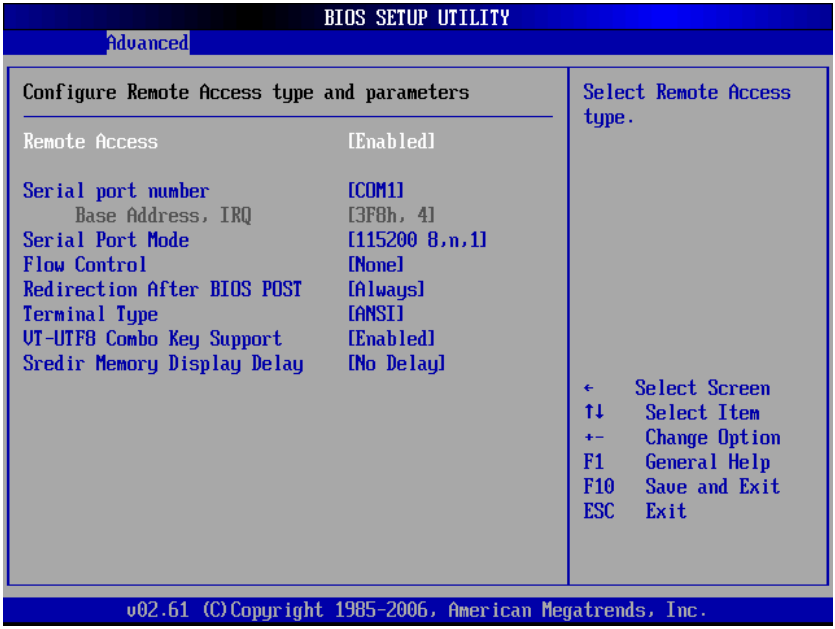
Hardware Health Configuration

This option displays the current status of all of the monitored hardware devices/components such as voltages and temperatures. The options are Enabled and Disabled.



Remote Access Configuration

Remote access configuration provides the settings to allow remote access by another computer to get POST messages and send commands through serial port access.



Remote Access

Select this option to Enable or Disable the BIOS remote access feature.

NOTE:

Enabling Remote Access requires a dedicated serial port connection. Once both serial ports are configured to disabled, you should set this value to Disabled or it may cause abnormal boot.

Serial Port Number

Select the serial port you want to use for the remote access interface. You can set the value for this option to COM1 or COM2.

NOTE:

If you have changed the resource assignment of the serial ports in Advanced> SuperIO Configuration, you must Save Changes and Exit, reboot the system, and enter the setup menu again in order to see those changes reflected in the available Remote Access options.

Serial Port Mode

Select the baud rate you want the serial port to use for console redirection. The options are 115200 8,n,1; 57600 8,n,1; 19200 8,n,1; and 09600 8,n,1.

Flow Control

Set this option to select Flow Control for console redirection. The settings for this value are None, Hardware, or Software.

Redirection After BIOS POST

This option allows you to set Redirection configuration after BIOS POST. The settings for this value are Disabled, Boot Loader, or Always.

- **Disabled:** Set this value to turn off the redirection after POST
- **Boot Loader:** Set this value to allow the redirection to be active during POST and Boot Loader.
- **Always:** Set this value to allow the redirection to be always active.

Terminal Type

This option is used to select either VT100/VT-UTF8 or ANSI terminal type. The settings for this value are ANSI, VT100, or VT-UTF8.

VT-UTF8 Combo Key Support

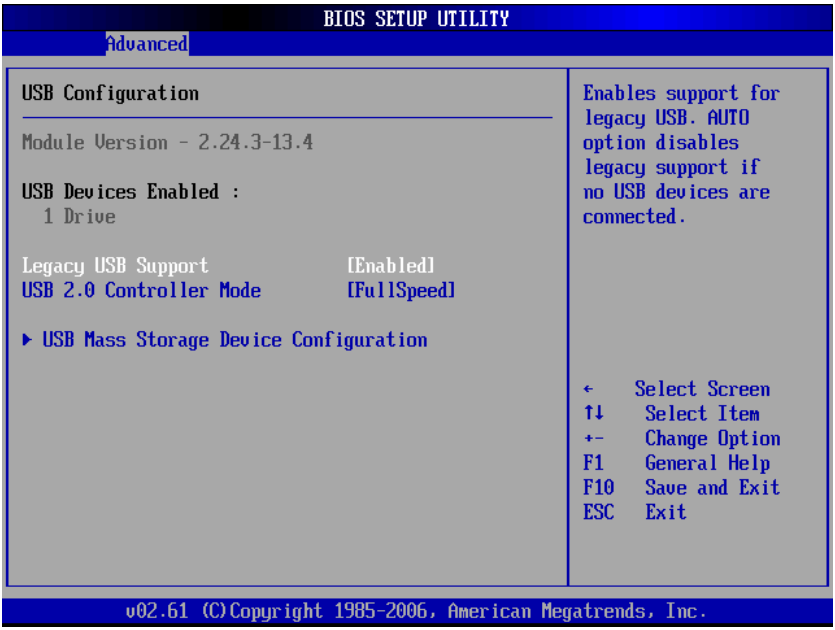
This option enables VT-UTF8 Combination Key Support for ANSI/VT100 terminals. The settings for this value are Enabled or Disabled.

Sredir Memory Display Delay

This option gives the delay in seconds to display memory information. The options for this value are No Delay, Delay 1 Sec, Delay 2 Sec, or Delay 4 Sec.

USB Configuration

You can use this screen to select options for the USB Configuration. Use the up and down < Arrow > keys to select an item. Use the < + > and < - > keys to change the value of the selected option. The settings are described on the following pages. The screen is shown below.


BIOS SETUP UTILITY
Advanced
USB Configuration
Module Version - 2.24.3-13.4
USB Devices Enabled :
1 Drive
Legacy USB Support [Enabled]
USB 2.0 Controller Mode [FullSpeed]
▸ USB Mass Storage Device Configuration
Enables support for legacy USB. AUTO option disables legacy support if no USB devices are connected.
← Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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Legacy USB Support

Legacy USB Support refers to USB mouse and keyboard support. Normally if this option is not enabled, any attached USB mouse or USB keyboard will not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can control the system even when there are no USB drivers loaded on the system. Set this value to enable or disable the Legacy USB Support.

- **Disabled:** Set this value to prevent the use of any USB device in DOS or during system boot.

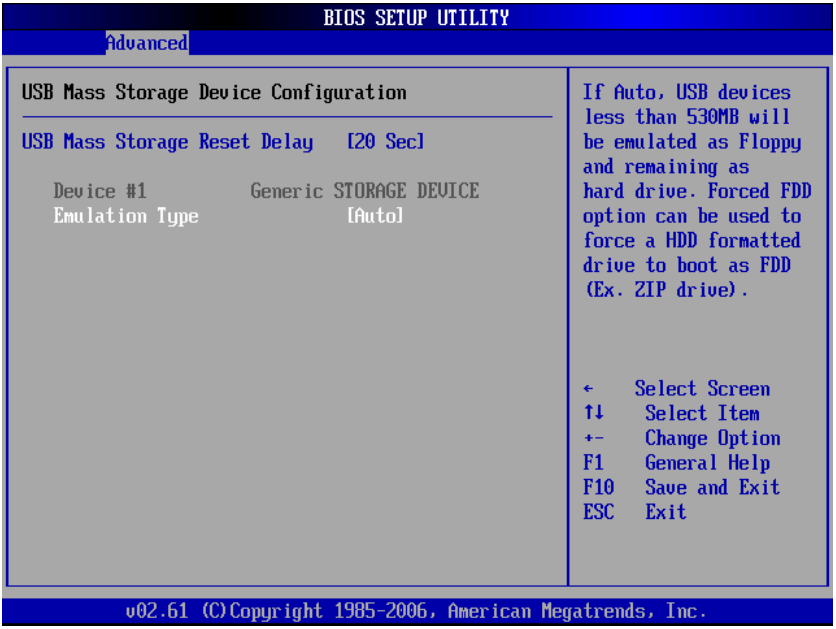
- **Enabled:** Set this value to allow the use of USB devices during boot and while using DOS.
- **Auto:** This option auto detects USB Keyboards or Mice and if found, allows them to be utilized during boot and while using DOS.

USB 2.0 Controller Mode

The USB 2.0 Controller Mode configures the data rate of the USB port. The options are FullSpeed (12 Mbps) and HiSpeed (480 Mbps).

USB Mass Storage Device Configuration

This is a submenu for configuring the USB Mass Storage Class Devices when BIOS finds they are in use on USB ports. Emulation Type can be set according to the type of attached USB mass storage device(s). If set to Auto, USB devices less than 530MB will be emulated as Floppy and those greater than 530MB will remain as hard drive. The Forced FDD option can be used to force a hard disk type drive (such as a Zip drive) to boot as FDD.


BIOS SETUP UTILITY
Advanced
USB Mass Storage Device Configuration
USB Mass Storage Reset Delay [20 Sec]
Device #1 Generic STORAGE DEVICE
Emulation Type [Auto]
If Auto, USB devices less than 530MB will be emulated as Floppy and remaining as hard drive. Forced FDD option can be used to force a HDD formatted drive to boot as FDD (Ex. ZIP drive).
← Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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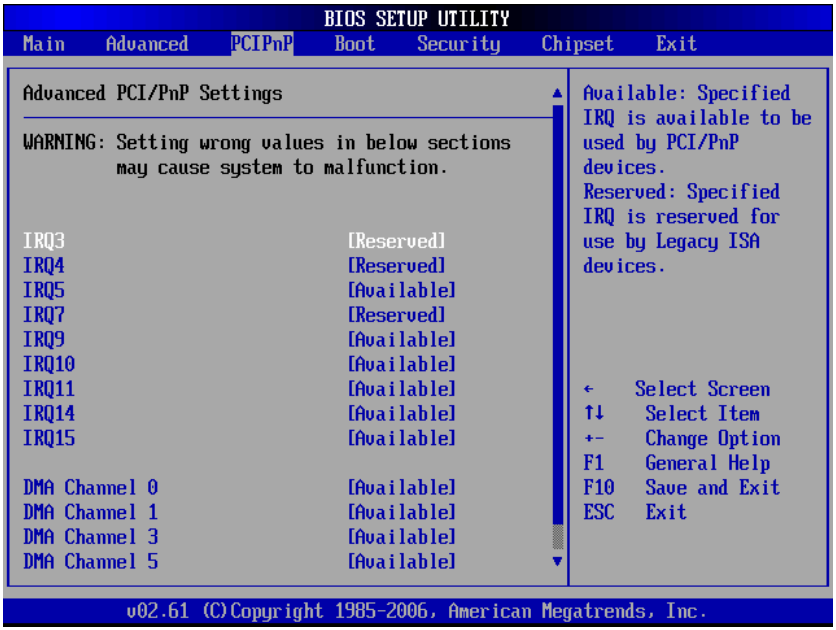
8.4 Advanced PCI/PnP Settings

Select the PCI/PnP tab from the setup screen to enter the Plug and Play BIOS Setup screen. You can display a Plug and Play BIOS Setup option by highlighting it using the < Arrow > keys. The Plug and Play BIOS Setup screen is shown below.


BIOS SETUP UTILITY
Main Advanced PCIPnP Boot Security Chipset Exit
Advanced PCI/PnP Settings
WARNING: Setting wrong values in below sections may cause system to malfunction.
IRQ3 [Reserved]
IRQ4 [Reserved]
IRQ5 [Available]
IRQ7 [Reserved]
IRQ9 [Available]
IRQ10 [Available]
IRQ11 [Available]
IRQ14 [Available]
IRQ15 [Available]
DMA Channel 0 [Available]
DMA Channel 1 [Available]
DMA Channel 3 [Available]
DMA Channel 5 [Available]
Available: Specified IRQ is available to be used by PCI/PnP devices.
Reserved: Specified IRQ is reserved for use by Legacy ISA devices.
← Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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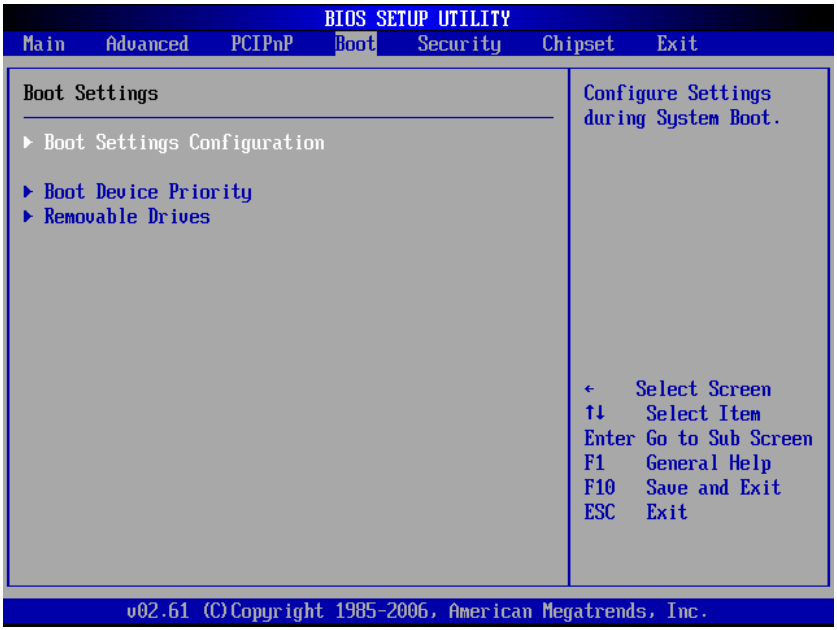
IRQ/DMA Channel

Set this value to allow the IRQ/DMA channel settings to be modified.

- **Available:** This setting allows the specified IRQ/DMA channel to be used by a PCI/PnP device.
- **Reserved:** This setting allows the specified IRQ/DMA channel to be used by a legacy ISA device.

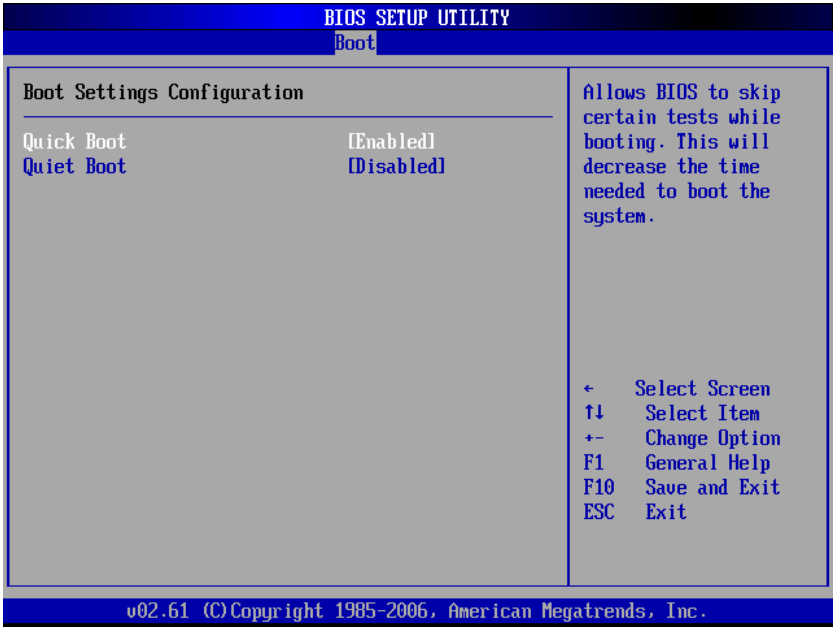
8.5 Boot Settings

Select the Boot tab from the setup screen to enter the Boot BIOS Setup screen. You can select any of the items in the left frame of the screen, such as Boot Device Priority, to go to the sub menu for that item. You can display a Boot BIOS Setup option by highlighting it using the < Arrow > keys. The Boot Settings screen is shown below:



Boot Settings Configuration

Use this screen to select options for the Boot Settings Configuration. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. The settings are described on the following pages. The screen is shown below.


BIOS SETUP UTILITY
Boot
Boot Settings Configuration
Quick Boot [Enabled]
Quiet Boot [Disabled]
Allows BIOS to skip certain tests while booting. This will decrease the time needed to boot the system.
← Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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Quick Boot

Enabling this setting will cause the BIOS power-on self test routine to skip some of its tests during bootup for faster system boot.

Quiet Boot

When this feature is **enabled**, the BIOS will display the OEM logo during the boot-up sequence, hiding normal POST messages.

When it is **disabled**, the BIOS will display the normal POST messages, instead of the OEM logo.

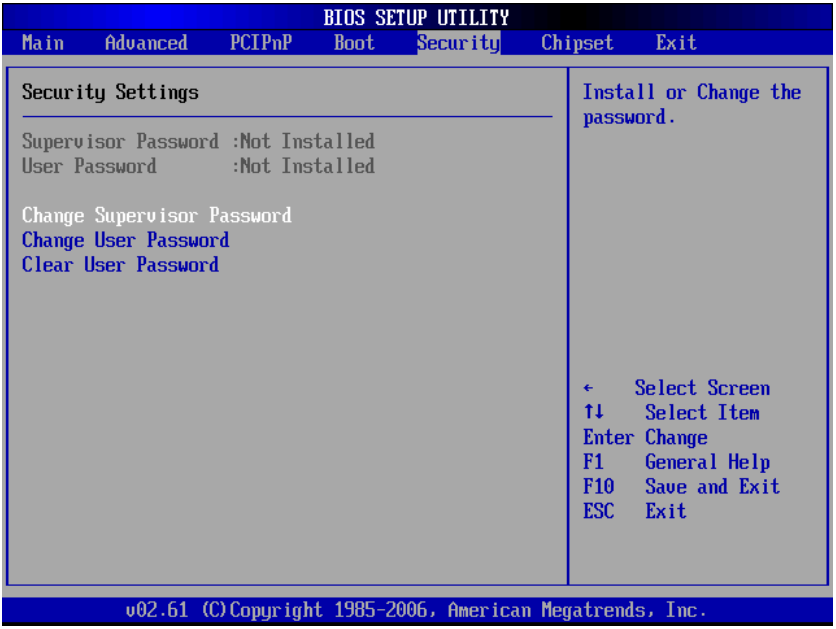
Boot Device Priority

The items allow you to set the sequence of boot devices where BIOS attempts to load the disk operating system. First press <Enter> to enter the sub-menu. Then you may use the arrow keys to select the desired device, then press <+>, <-> or <PageUp>, <PageDown> key to move it up/down in the priority list.

Boot Device Groups

The Boot devices are listed in groups by device type. First press <Enter> to enter the sub-menu. Then you may use the arrow keys to select the desired device, then press <+>, <-> or <PageUp>, <PageDown> key to move it up/down in the priority list. Only the first device in each device group will be available for selection in the Boot Device Priority option.

8.6 Security Setup



Password Support

Two Levels of Password Protection

Provides both a Supervisor and a User password. If you use both passwords, the Supervisor password must be set first.

The system can be configured so that all users must enter a password every time the system boots or when Setup is executed, using either or either the Supervisor password or User password.

The Supervisor and User passwords activate two different levels of password security. If you select password support, you are prompted for a one to six character password. Type the password on the keyboard. The password does not appear on the screen when typed. Make sure you write it down. If you forget it, you must drain NVRAM and re-configure.

Remember the Password

Keep a record of the new password when the password is changed. If you forget the password, you must erase the system configuration information in NVRAM.

To access the sub menu for the following items, select the item and press < Enter >:

- Change Supervisor Password
- Change User Password
- Clear User Password

Supervisor Password

Indicates whether a supervisor password has been set.

User Password

Indicates whether a user password has been set.

Change Supervisor Password

Select this option and press < Enter > to access the sub menu. You can use the sub menu to change the supervisor password.

Change User Password

Select this option and press < Enter > to access the sub menu. You can use the sub menu to change the user password.

Clear User Password

Select this option and press < Enter > to access the sub menu. You can use the sub menu to clear the user password.

Change Supervisor Password

Select Change Supervisor Password from the Security Setup menu and press < Enter >.

Enter New Password:

Type the password and press < Enter >. The screen does not display the characters entered. Retype the password as prompted

and press < Enter >. If the password confirmation is incorrect, an error message appears. The password is stored in NVRAM after completes.

Change User Password

Select Change User Password from the Security Setup menu and press < Enter >.

Enter New Password:

Type the password and press < Enter >. The screen does not display the characters entered. Retype the password as prompted and press < Enter >. If the password confirmation is incorrect, an error message appears. The password is stored in NVRAM after completes.

8.7 Chipset Setup

Select the Chipset tab from the setup screen to enter the Chipset BIOS Setup screen. You can select any of the items in the left frame of the screen to go to the sub menu for that item. The Chipset BIOS Setup screen is shown below.

USB Functions

Set this value to allow the system to disable, enable, and select a set number of onboard USB ports.

USB 2.0 Controller

This option takes effect only when USB Functions are enabled. Enabling will allow USB 2.0 functionality to all USB ports.

HDA Controller

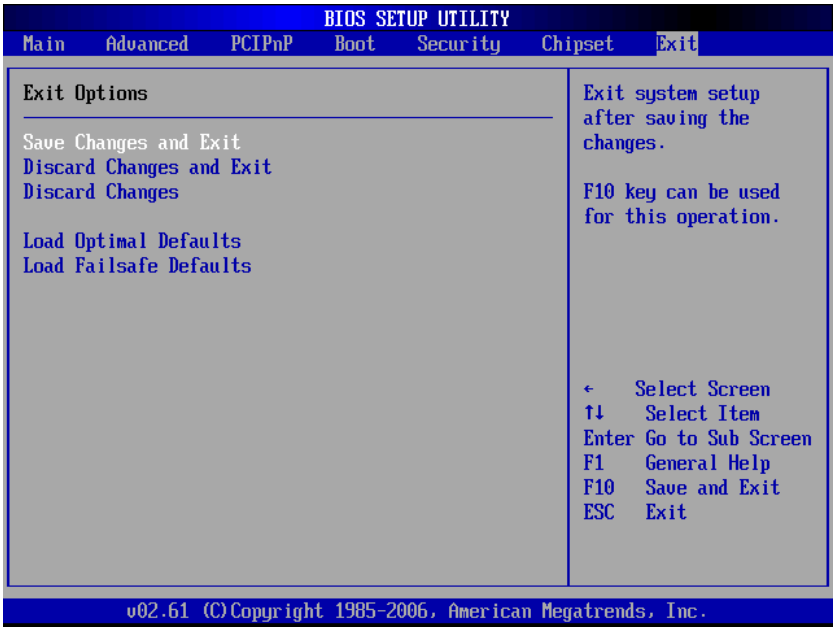
Set this value to Enable/Disable the HDA Controller.

Onboard LAN BIOS Init

Set this value to enable/disable the invoking of onboard LAN's PXE ROM. Disabling can shorten the POST time by not initializing LAN PXE ROM. Enable it if boot from LAN is needed.

8.8 Exit Menu

Select the Exit tab from the setup screen to enter the Exit BIOS Setup screen. You can display an Exit BIOS Setup option by highlighting it using the < Arrow > keys. The Exit BIOS Setup screen is shown below.


BIOS SETUP UTILITY
Main Advanced PCIPnP Boot Security Chipset Exit
Exit Options
Save Changes and Exit
Discard Changes and Exit
Discard Changes
Load Optimal Defaults
Load Failsafe Defaults
Exit system setup after saving the changes.
F10 key can be used for this operation.
← Select Screen
↑↓ Select Item
Enter Go to Sub Screen
F1 General Help
F10 Save and Exit
ESC Exit
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Save Changes and Exit

When you have completed the system configuration changes, select this option to leave Setup and reboot the computer so the new system configuration parameters can take effect.

Save Configuration Changes and Exit Now?

[Ok] [Cancel]

appears in the window. Select Ok to save changes and exit.

Discard Changes and Exit

Select this option to quit Setup without making any permanent changes to the system configuration.

Discard Changes and Exit Setup Now?

[Ok] [Cancel]

appears in the window. Select Ok to discard changes and exit.

Discard Changes

Select Discard Changes from the Exit menu and press < Enter >.

Select Ok to discard changes.

Load Optimal Defaults

Automatically sets all Setup options to a complete set of default settings when you select this option. The Optimal settings are designed for maximum system performance, but may not work best for all computer applications. In particular, do not use the Optimal Setup options if your computer is experiencing system configuration problems.

Select Load Optimal Defaults from the Exit menu and press < Enter >.

Select Ok to load optimal defaults.

Load Failsafe Defaults

Automatically sets all Setup options to a complete set of default settings when you select this option. The Failsafe settings are designed for maximum system stability, but not maximum performance. Select the FailSafe Setup options if your computer is experiencing system configuration problems.

Select Load Fail-Safe Defaults from the Exit menu and press < Enter >.

Load FailSafe Defaults?

[Ok] [Cancel]

appears in the window. Select Ok to load FailSafe defaults.

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Important Safety Instructions

Please read and follow all instructions marked on the product and in the documentation before operating the system. Retain all safety and operating instructions for future use.

- Please read these safety instructions carefully.
- Please keep this User's Manual for future reference.
- The equipment should be operated within the recommended operating temperature.
- The equipment should be operated only from the type of power source indicated on the rating label. Make sure the voltage of the power source is correct when connecting the equipment to the power outlet.
- If the user's equipment has a voltage selector switch, make sure that the switch is set to the proper position for the area. The voltage selector switch is set at the factory to the correct voltage.
- For pluggable equipment, ensure they are installed near a socket-outlet that is easily accessible.
- Secure the power cord to prevent unnecessary accidents. Do not place anything over the power cord.
- If the equipment will not be in use for long periods of time, disconnect the equipment from mains to avoid being damaged by transient overvoltage.
- All cautions and warnings on the equipment should be noted.
- Please keep this equipment away from humidity.
- Do not use this equipment near water or a heat source.
- Place this equipment on a reliable surface when installing. A drop or fall could cause injury.
- Never pour any liquid into the opening, this could cause fire or electrical shock.

- Openings in the case are provided for ventilation. Do not block or cover these openings. Make sure there is adequate space around the system for ventilation when setting up the work area. Never insert objects of any kind into the ventilation openings.
- To avoid electrical shock, always unplug all power and modem cables from the wall outlets before removing covers.
- Lithium Battery provided (real time clock battery)

  “CAUTION - Risk of explosion if battery is replaced by an incorrect type. Dispose used batteries as instructed in the instructions”
- The equipment should be checked by service personnel if one of the following situation arises:
  - The power cord or plug is damaged.
  - Liquid has penetrated the equipment.
  - The equipment has been exposed to moisture.
  - The equipment is not functioning or does not function according to the user’s manual.
  - The equipment has been dropped and damaged.
  - If the equipment has obvious sign of breakage.
- Never open the equipment. For safety reasons, the equipment should only be opened by qualified service personnel.

Getting Service

Contact us should you require any service or assistance.

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